# REPORT RESUMES

ED 020 618 EF 000 104

NEW LIFE FOR OLD SCHOOLS. REPORT OF A WORKSHOP FOR REPRESENTATIVES OF THE GREAT CITIES IN RELATION TO THE SPRING CONFERENCE OF THE RESEARCH COUNCIL OF THE GREAT CITIES PROGRAM FOR SCHOOL IMPROVEMENT, (NEW YORK, MAY 1, 1965).

RESEARCH COUN OF GR. CITIES PROG. FOR SCH. IMPROV.

PUB DATE JUN 65

EDRS PRICE MF-$0.50 HC-$4.20 103P.

DESCRIPTORS- *COSTS, *PLANNING, *SCHOOL BUILDINGS, *SCHOOL CONSTRUCTION, *SCHOOL IMPROVEMENT, CONSTRUCTION COSTS, ESTIMATED COSTS, FACILITY GUIDELINES,

A SERIES OF REPORTS ON THE CRITERIA FOR EVALUATING AND PROCEDURES FOR SAVING OLDER SCHOOL BUILDINGS STATES POPULATION NECESSARY, ECONOMIC NECESSITY AND SENTIMENT ARE MAIN REASONS FOR RETAINING OLDER STRUCTURES. THE ADEQUACY OF THE BUILDINGS SHOULD BE EVALUATED IN TERMS OF EDUCATIONAL REQUIREMENTS, ADMINISTRATIVE FUNCTIONS, SAFETY, OPERATIONS AND MAINTENANCE, PUPIL CAPACITY, AESTHETICS, SITE, ADAPTABILITY OF STRUCTURE FOR CONVERSION AND THE FINANCIAL ABILITY OF THE DISTRICT. ORTHER CRITERIA TO BE CONSIDERED ARE--(1) DISPOSITION OF BUILDING IN TERMS OF FIRE RESISTANCE, (2) CAPACITY FOR FUTURE ENROLLMENT, (3) AGE AND NEED FOR REPAIR (4) ENVIRONMENT--LIGHT, HEAT, VENTILATION, (5) DEGREE OF ALTERATION FOR MODERNIZING, (6) LOCATION AND SIZE OF SITE IN RELATION TO FUTURE ENROLLMENT, (7) FACTORS OF COST, AND (8) INTEGRATION AND COMMUNITY REDEVELOPMENT PLANS. THE STUDY INCLUDES THE CRITERIA FOR CONTRACTORS' EVALUATION OF PLUMBING, HEATING, ELECTRICAL FACILITIES, VENTILATION AND STRUCTURAL RENOVATIONS OF THE BUILDINGS. SCHOOL MODERNIZATION PROGRAMS BEING CONDUCTED IN FIFTEEN MAJOR CITIES IN THE UNITED STATES ARE REVIEWED. THIS DOCUMENT IS ALSO AVAILABLE FOR $2.50 FROM THE RESEARCH COUNCIL OF THE GREAT CITIES PROGRAM FOR SCHOOL IMPROVEMENT, 4433 W. TOUHY AVENUE, CHICAGO, ILLINOIS 60645. (GM)

ED020618

# NEW LIFE for OLD SCHOOLS!

EF000104

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

REPORT OF A WORKSHOP FOR
representatives of the Great Cities
in relation to the Spring Conference
of The Research Council of the
Great Cities Program for School
Improvement, Saturday, May 1, 1965,
at the Statler Hilton Hotel, New York
City.

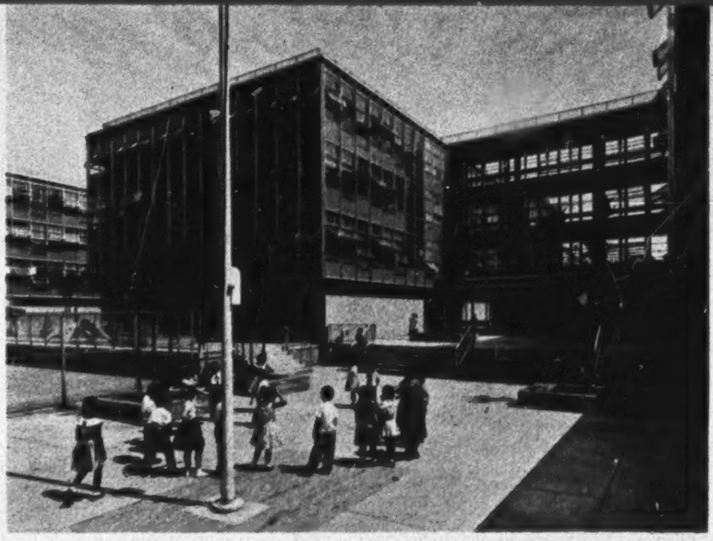
Copyright, June 1965, by The Research
Council of the Great Cities Program
for School Improvement, 5400 North
St. Louis Avenue, Chicago, Illinois 60625.

Second Printing: January 1966.

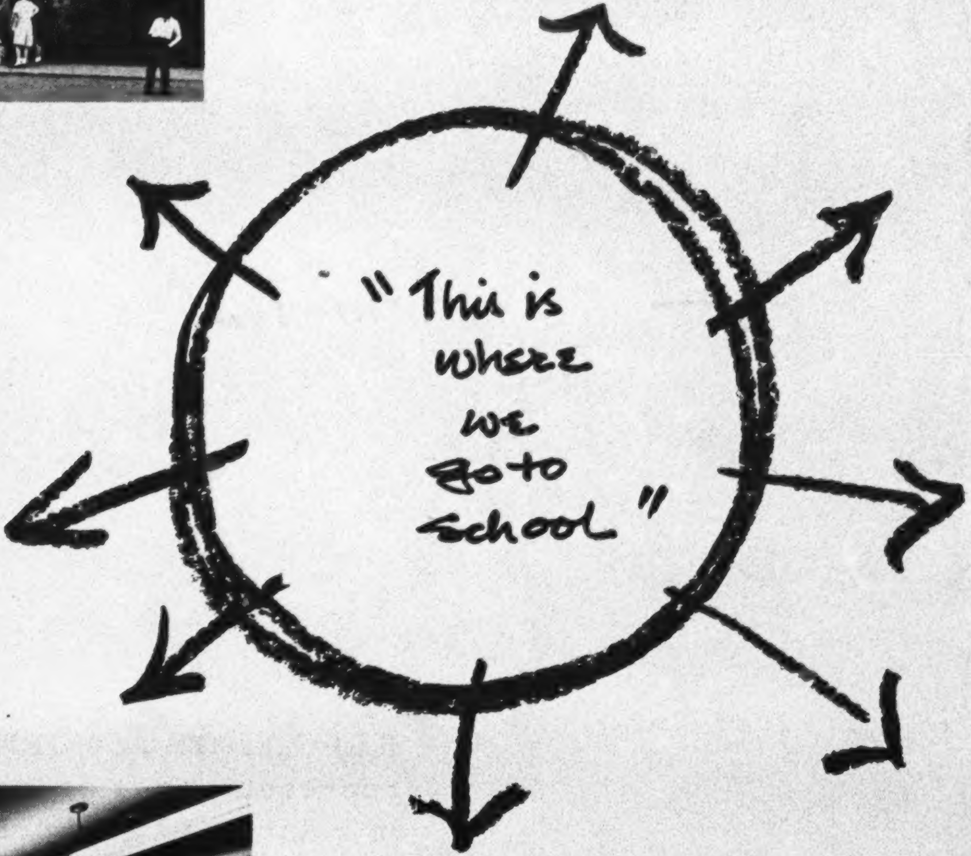
Single Copy $2.50

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY Ben S. Graves.

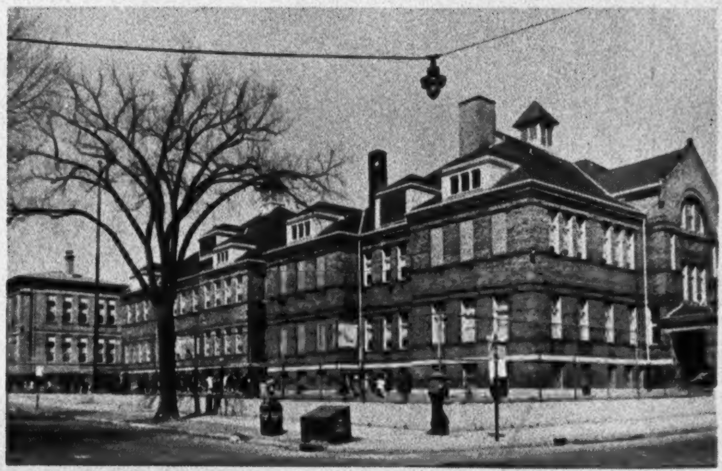
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

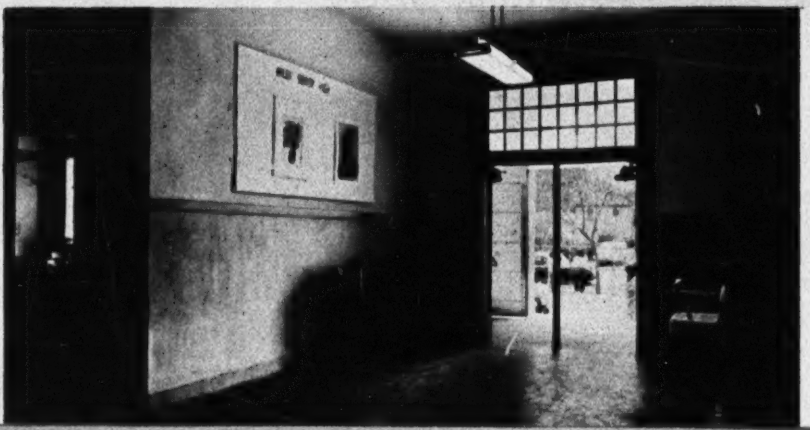


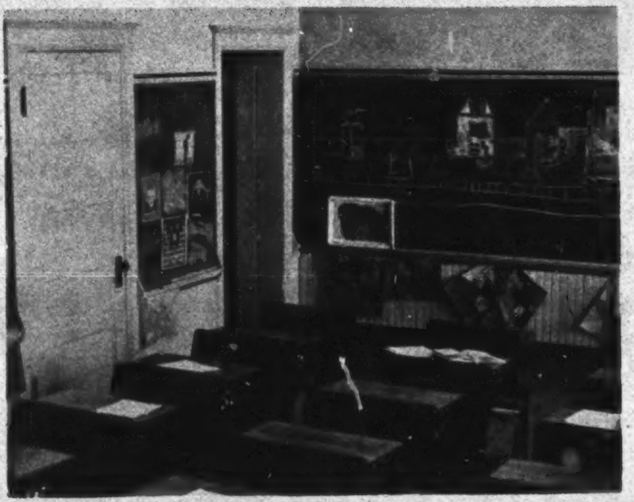
1925
EDISON JUNIOR HIGH SCHOOL

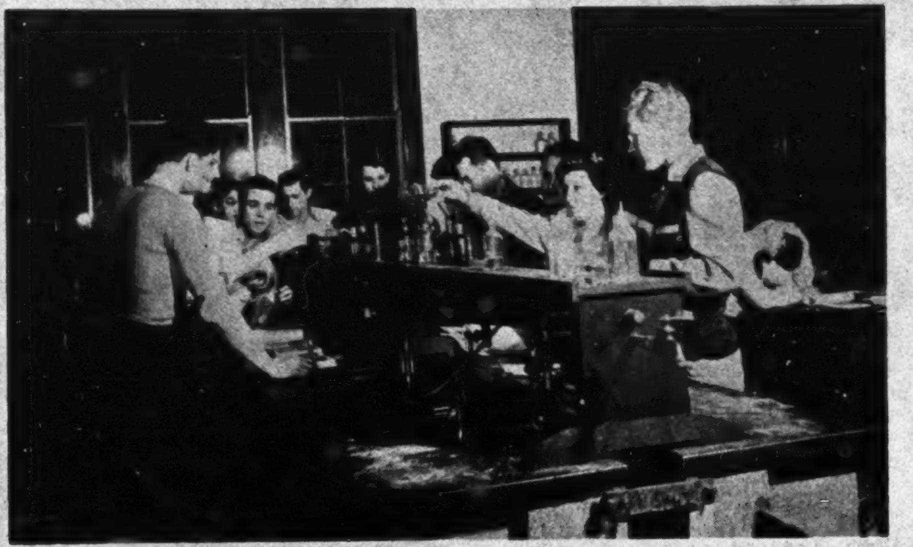

"This is where we go to school"

MARCH









## CONTENTS

1 A SURVEY OF THE PROBLEM

Ben E. Graves
Project Director

13 THE CONTRACTOR LOOKS AT REMODELING

15 Harry Gillies
General Contractor
17 Liam Dalton
Mechanical-Electrical Engineer
23 Anthony Nassetta
Structural Engineer
27 Bernard Reissman
Heating and Ventilating Engineer

31 A LOOK AT THREE PROGRAMS

33 Milwaukee
Howard M. Aker
36 San Francisco
William G. Vestnys
45 Baltimore
Ambrose Chlada, Jr.

49 A WORKSHOP SKETCHBOOK

A special insert by
C. William Brubaker, Architect

59 REPORTS FROM OTHER CITIES

61 Boston - Anthony Galeota
63 Buffalo - Bernard J. Rooney
68 Chicago - E. A. Lederer
71 Cleveland - T. W. Hartman
76 Detroit - Alvin G. Skelly
77 Houston - Glenn Fletcher
81 Los Angeles - Virgil Volla
82 New York - Salvatore J. Sciano
84 Philadelphia - Harry B. Saunders
85 Pittsburgh - J. H. Thompson
88 St. Louis - J. Ernest Kuehner
91 Washington, D. C. - Carl F. Hansen

92 ADDITIONAL TABLES

94 BIBLIOGRAPHY

98 CREDITS

"Administrative arrangements must provide for the transportation of pupils who will be housed temporarily in other schools."

"Ugly buildings are torn down long before their physical usefulness has ended."

"Structurally, buildings built prior to 1900 should not be seriously considered for remodeling."

"It is inevitable that the piping is in poor condition unless the maintenance program has included systematic replacement over the years."

"Often modernization of over-aged buildings has been postponed when the funds were needed for other problems such as a fire-safety program."

"..we are faced with a very real problem in human psychology. Having no affinity with former traditions, the present residents want new buildings as opposed to remodeled old buildings."

"Structural remodeling costs should never exceed 20 to 25% of total cost."

"Structural remodeling is relatively simple in the all steel framing systems, but much more difficult in the all reinforced concrete framing systems."

"More than 35,000 instructional rooms in the fifteen Great Cities were constructed prior to 1920."

"The mechanical and electrical rehabilitation...has to be carefully planned and cannot be carried out 'piecemeal'..have complete drawings prepared and let your staff do whatever they can, consistent with the total picture."

"Give us better plans. This will save time and money."

# A SURVEY OF THE PROBLEM

By Ben E. Graves
Project Director

On February 1 of this year, The Research Council of the Great Cities Program for School Improvement announced a grant from the Educational Facilities Laboratories of the Ford Foundation for a study of the problems connected with the modernization of outmoded school plants. It seemed logical to organize the study into a three-phase project. Phase I is a survey, city-by-city, to see what is being done, as well as to define the problem. This workshop is part of Phase I.

One of the things I have been doing these past three months is seeing the facade -- the Chamber of Commerce aspect of the cities -- as well as the educational facilities hiding behind the tall buildings. It seems to me this is necessary to help us realize the greatness of the Great Cities. They are all exciting and they are all different. But in many ways, including the old school problem, they are amazingly alike.

More than 35,000 instructional rooms in the fifteen Great Cities were constructed prior to 1920. In St. Louis sixty-four per cent of the schools were built before 1920. In San Francisco, sixty-five buildings were put in place prior to 1925 -- more than forty of them prior to 1920. In New York there are 10,700 instructional rooms completed before 1920. And so it goes. These statistics, for the most part, are based on figures from the National Inventory of School Facilities conducted by the Office of Education in the Spring of 1962 (see tables at the end of the report).

On Page 3 is a statistical breakdown just compiled from each of the Great Cities showing that as of June of this year there are 569 elementary schools and 30 secondary schools constructed prior to 1900; 889 schools of all types from 1901-1920; or a total of 1510 schools of all types prior to 1920.

Dr. George Collins, who directed the first national inventory of school facilities for the U. S. Office of Education, reminds us in the June 1964 issue of American School and University Magazine, that there are, in this country, 30,000 public school buildings and additions containing 238,000 classrooms that have been in use for more than 45 years. These classrooms represent almost one-sixth of all permanent instructional areas. In addition there are 42,500 classrooms in 5,000 non-public school buildings that have been in use since before 1920. If we start adding the general-use facilities as reported by Dr. Collins' statistics, we begin to get staggering figures -- 28,000 libraries, cafeterias, auditoriums, and gymnasiums in public schools and more than 8,000 such facilities in non-public schools in service for more than 45 years. These few figures point up the scope of the problem we are discussing.

In Dr. Collins' article he says, "School officials and taxpayers have been fighting an uphill battle to provide new classrooms for increasing enrollments and shifting population centers, but too often they have neglected their older school buildings. These now look like so many 'poverty schools.' Deterioration takes effect so imperceptibly by use, changes in weather, and the passage of time that many of us fail to realize the inequalities in educational opportunities that result...Some of the most serious building defects that our school children must contend with are poor lighting, inadequate heating, structural deterioration, leaking and water seepage, below-standard existing, inflammable floors and stairways, dangerously weakened window sashes, dull and decadent decor, poorly integrated additions, and inadequate land sites."

The fifteen cities representing the Great Cities group have long recognized the problem. All have some type of program to cope with the older school. But, recognizing that too often renovation was becoming confused with maintenance, it was decided to take some formal action as a group. The background for this study began more than a year ago with a committee of representative staff members from the Great Cities. Mr. Glenn Fletcher, of Houston, reported for the committee to the Board of Directors in Pittsburgh last November, and at that time it was recommended the project be developed.

As I visit the various cities, and research the subject,

### The Research Council of the
### Great Cities Program for School Improvement

## Age of Plant Facilities (Not Including Additions)
## As of June 1965

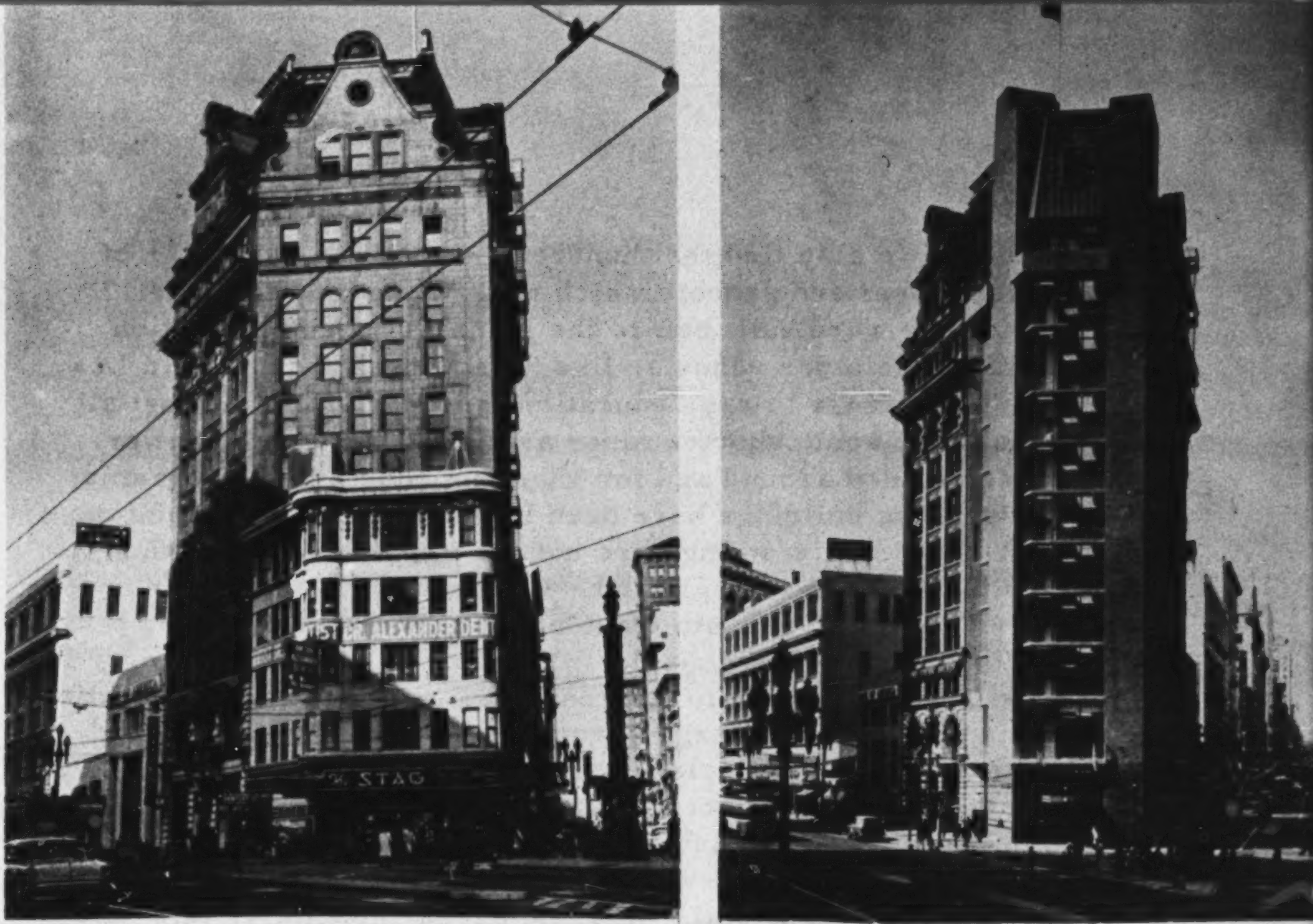
| | Elementary | | | | Junior High | | | | Senior High & Vocational | | | | Junior College | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Prior to 1900 | 1901 to 1920 | 1921 to 1940 | 1941 to 1965 | Prior to 1900 | 1901 to 1920 | 1921 to 1940 | 1941 to 1965 | Prior to 1900 | 1901 to 1920 | 1921 to 1940 | 1941 to 1965 | Prior to 1900 | 1901 to 1920 | 1921 to 1940 | 1941 to 1965 | Total |
| Baltimore | 49 | 22 | 28 | 51 | 10 | 2 | 7 | 8 | 3 | 2 | 3 | 6 | 0 | 0 | 0 | 1 | 192 |
| Boston | 47 | 49 | 41 | 13 | 1 | 5 | 11 | 0 | 2 | 6 | 11 | 0 | 0 | 0 | 0 | 0 | 186 |
| Buffalo | 20 | 24 | 51 | 30 | 0 | 1 | 0 | 3 | 0 | 7 | 6 | 0 | 0 | 0 | 0 | 0 | 142 |
| Chicago | 118 | 110 | 100 | 158 | 0 | 0 | 0 | 0 | 6 | 20 | 21 | 9 | 0 | 0 | 2 | 0 | 544 |
| Cleveland | 44 | 41 | 22 | 31 | 3 | 5 | 8 | 6 | 3 | 5 | 5 | 1 | 0 | 0 | 0 | 0 | 174 |
| Detroit | 24 | 66 | 83 | 64 | 1 | 7 | 14 | 13 | 0 | 8 | 10 | 6 | 0 | 0 | 0 | 0 | 296 |
| Houston | 9 | 28 | 30 | 92 | 1 | 2 | 10 | 17 | 2 | 2 | 5 | 14 | 0 | 0 | 0 | 0 | 212 |
| Los Angeles | 3 | 36 | 192 | 200 | 0 | 1 | 33 | 36 | 1 | 6 | 33 | 16 | 0 | 2 | 2 | 4 | 565 |
| Milwaukee | 31 | 29 | 24 | 37 | 1 | 0 | 5 | 8 | 1 | 4 | 5 | 3 | 0 | 0 | 0 | 0 | 148 |
| New York | 103 | 118 | 217 | 162 | 3 | 27 | 38 | 72 | 7 | 27 | 43 | 21 | 0 | 0 | 0 | 0 | 838 |
| Philadelphia | 39 | 60 | 70 | 42 | 0 | 1 | 24 | 7 | 0 | 5 | 10 | 7 | 0 | 0 | 0 | 0 | 265 |
| Pittsburgh | 15 | 29 | 21 | 16 | 1 | 1 | 5 | 0 | 4 | 6 | 8 | 1 | 0 | 0 | 0 | 0 | 107 |
| St. Louis | 33 | 44 | 23 | 38 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 2 | 0 | 0 | 1 | 0 | 151 |
| San Francisco | 1 | 37 | 32 | 30 | 0 | 2 | 9 | 4 | 0 | 1 | 6 | 2 | 0 | 0 | 1 | 0 | 125 |
| Washington | 33 | 29 | 31 | 40 | 1 | 2 | 13 | 10 | 1 | 5 | 9 | 2 | 0 | 0 | 0 | 0 | 176 |
| TOTAL | 569 | 722 | 965 | 1004 | 22 | 56 | 177 | 184 | 30 | 109 | 180 | 90 | 0 | 2 | 6 | 5 | 4121 |

some examples of good renovations stand out. San Francisco is a city filled with ideas -- examples of what you can do with imagination. The Columbus Tower in that city is, to me, a project in the proper spirit. A half mile from San Francisco Bay, and not far from the rising Jackson Square section, the new Columbus Tower juts up at a major intersection. This is the former Sentinal Building, considered a worthless relic of earthquake days and for sale at $76,000. It was purchased, and Architect Henrik Bull was given the job of up-dating the 1906 building. In the architect's opinion, its period spirit deserved retention, so he restored it with a stylish paint job and not too many exterior changes. Architect Bull replaced a disorganized ground floor wall with rich blue glass mosaic tile and tall windows. He gutted the plumbing, heating, elevatoring, and electrical systems. The best part of the story is that within four months of the upper floors' completion, they were all rented. The ground floor is an attractive coffee shop and the basement a radio station. Gross rentals in 1960 were up from a pre-renovation $11,000 to $39,000, the net up from $5,000 to $26,000. Cost of renovation: $155,000.

In St. Louis, Chicago and other cities, we are all familiar with the "discovered" area where the smart shops and restaurants come in to take advantage of period architecture. In New York it's Greenwich Village; in Chicago, it's Old Town; in St. Louis, Gas Light Square. Then there are the office buildings, like the Columbus Tower, or the Citizens Federal Savings building in San Francisco which prompted the local newspapers to comment editorially.

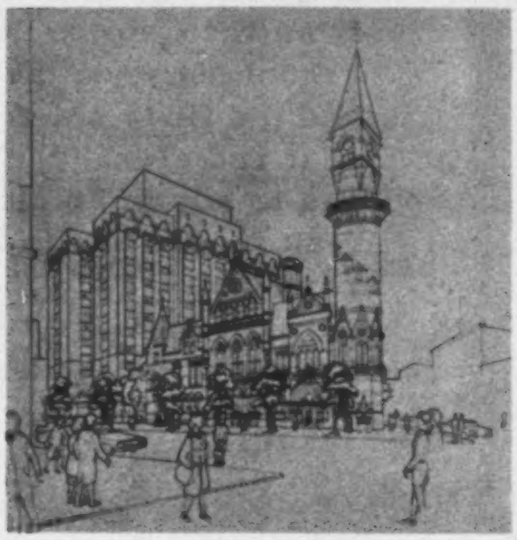
Another renovation worth mentioning is the contemplated conversion of the famous Jefferson Market Courthouse in New York to a public library - Architect Georgio Cavaglieri. Two of the most successful I've seen are the board offices in Los Angeles and Houston. Both are housed in former schools. Both show what can be done with imagination and concern for the function to be accomplished within the space.

If we go behind that facade I mentioned a while ago and leave our statistics in the office, we find that hundreds -- yes, thousands -- of our children attend schools we see proudly displayed in the pages of the latest architectural and educational



The owner, Citizens Federal Savings and Loan Association, and the architects, Clark & Beuttler, chose to save this 1902 building, add a complementary corner tower, and leave San Francisco with an improvement of the original.

The Jefferson Market Courthouse, completed in 1876, is now being remodeled by Architect Giorgio Cavaglieri as The Jefferson Market Branch of The New York City Public Library



journals. We also find that hundreds -- yes, thousands -- of our children attend schools which never appear in the journals, in fact many were built before the journals began publication. Some of these older schools, like "Mr. Novak's school" in Los Angeles, continue to say "education is important." Almost all of them have some shortcomings as viewed next to the newer schools planned around and for changing educational programs. But where the buildings have been loved and respected over the years, these shortcomings are not too important. It is when the building has been neglected -- ignored may be a better word -- where we get into trouble. We should probably stop here for a minute and consider why some buildings are ignored. I think it would be safe to say that in all cases the administration five, ten, fifteen years ago surveyed the systems and marked certain buildings for replacement or abandonment. In too many cases this simply has not happened. The children keep coming, and the building scheduled for replacement continues to operate with the hope that in a few years "the old dog" can be given a quick, but decent, burial. In some cases, hopefully, this will happen. In some, it will not. Architect Lawrence B. Perkins, of The Perkins & Will Partnership, says: "Buildings do not fall down; they are torn down. Ugly buildings are torn down long before their physical usefulness has ended." In this study I'm finding this to be a truism.

In Washington I was shown a building built in 1873 where the residents of the neighborhood have petitioned to save it. This is in an area where some of the old buildings -- slums just yesterday -- are being renovated by private capital to pleasant, in-city homes. The school does not violate the architectural atmosphere of the "new" community. The building is at the end of a charming little park and is just a few blocks from the Capitol Building. The child sees an inviting old red school house at the end of the park and once there, sees the park and the fine, old reclaimed homes beyond. Inside the building is neat and clean, but inadequate to serve the area. The principal has to administer another school more than a mile away. The visitor, the staff, the community agree it is a shame to consider replacing it, but there seems to be no solution. But is there, perhaps, a way to save this school and still give the community the educational plant they need?

In some cities they think so.

The Milwaukee approach is, perhaps, the most ambitious modernization program of any of the Great Cities. From a report on the subject I quote: "Complete modernization is adding years of efficient and economical use to the life of valuable educational facilities in the city. Such transformation is being accomplished at a fraction of the cost of a new structure of the same size. More important, it is helping to ensure equality of educational opportunity for children in all parts of the city." As an example, a school built in 1887. Before modernizing, the classrooms had high ceilings, inadequate lighting, no acoustical treatment. The modernization program is quite complete, giving Milwaukee "new schools for old."

Following the 1933 Los Angeles earthquake, the Field Act was passed which regulates the structural design of that city's school buildings to resist earthquake shock. Since 1933 the school district has been continually engaged in the structural strengthening or replacement of its hundreds of buildings that did not meet the Field Act requirements. There are approximately 120 buildings still to be strengthened. In doing this work, some remodeling is accomplished. One school in Los Angeles, for instance, presently being completed is a real asset to the area. The entrance will be retained, a little less formally than it was previously. In this elementary school, the old woodwork -- beautifully grained -- is being re-used. The building is being completely gutted -- keeping the best of the past to blend with the new. Because of a new expressway noise problem, the school is being air-conditioned.

McKinley High School in St. Louis was completed in 1903. The school is needed to take care of the students living in the east central portion of the city. In the modernization program they converted science rooms to a guidance office, even retaining the old stepped seating for group guidance or career talks. Part of the room is partitioned off for private counseling. An old gymnasium was converted to a science room. The area is left open between the lecturer and the lab area, but still has a feeling of separation with a "room divider" arrangement of the demonstration table and the chalk board. The biology room was simply modernized, with a badly placed and seldom used greenhouse done away with and a science table used next to the large window area in the room. They say this is a popular arrangement and one which they will duplicate in other biology room renovations.

These are just a few of the approaches and examples of what is being done in our cities today.

One of the problems is that we think too often of trying to do an entire up-dating job within the old schools' walls. We must consider building new areas and change old ones to meet the educational program and not be confined by the existing walls. This is borne out by a successful school up-dating in Evergreen Park, Illinois, where new spaces were added, new uses found for old spaces, and the problems of noise and heat transmission solved with a thoughtful approach to the new addition.

Those of you who were in Atlantic City this year were undoubtedly impressed by the addition St. Louis architects William B. Ittner, Inc. planned for the heart of an old high school in Ladue, Missouri.

In Baltimore a school not too distinguished, architecturally, was renovated because the in-city community it served wanted it so. It is a bright, clean, proud school and one that stands -- and has stood for many generations -- as a symbol of education to the community.

We have such stories from almost all of the cities. They are too few, however, because of the way neighborhoods are changing or destroyed by shifting populations and that coverall approach we call urban renewal.

We know there are many reasons for retaining old schools within a system. Briefly stated we could list: population necessity, economic necessity and sentiment. The last cannot be ignored. When the Great Cities committee met on this subject, they said it is necessary to evaluate the adequacy of existing facilities in terms of:

Educational requirements
Administrative functions
Safety
Operation and maintenance

Pupil capacity
Aesthetic considerations
Site size, location and transportation
Adaptability of structure for conversion
Financial ability of the district

Mr. Harry Saunders, on a leave of absence from the Los Angeles schools to conduct a study of Philadelphia's school facilities, lists these factors to be considered in determining need for replacement, abandonment or modernization:

Replacement or abandonment of all non-fire-resistant buildings.

Building capacity versus future enrollment trends.

Age of building and need for maintenance and repair.

Existing fire and safety hazards and their cost of correction.

Educational adequacy in terms of light, ventilation, space, size and arrangement.

Degree of alteration and modernization required by the instructional program.

Total cost factors of replacement versus renovation and modernization.

Degree to which integration may be fostered by abandonment or replacement.

Effect of community redevelopment programs on abandonment, relocation or renovation.

Location and size of site in relation to future enrollment to be served.

In some cities after studying the answers to similar lists of questions, if the cost of renovation approaches 60 per cent of the cost of replacement, the building would be replaced. In other cities, they report 80 per cent and with anything above 50 per cent stop and take a look at the advisability of keeping the school. But, and this is a unanimous opinion, if you don't have seats for children, you just simply have to keep the building.

And that's where we are today.

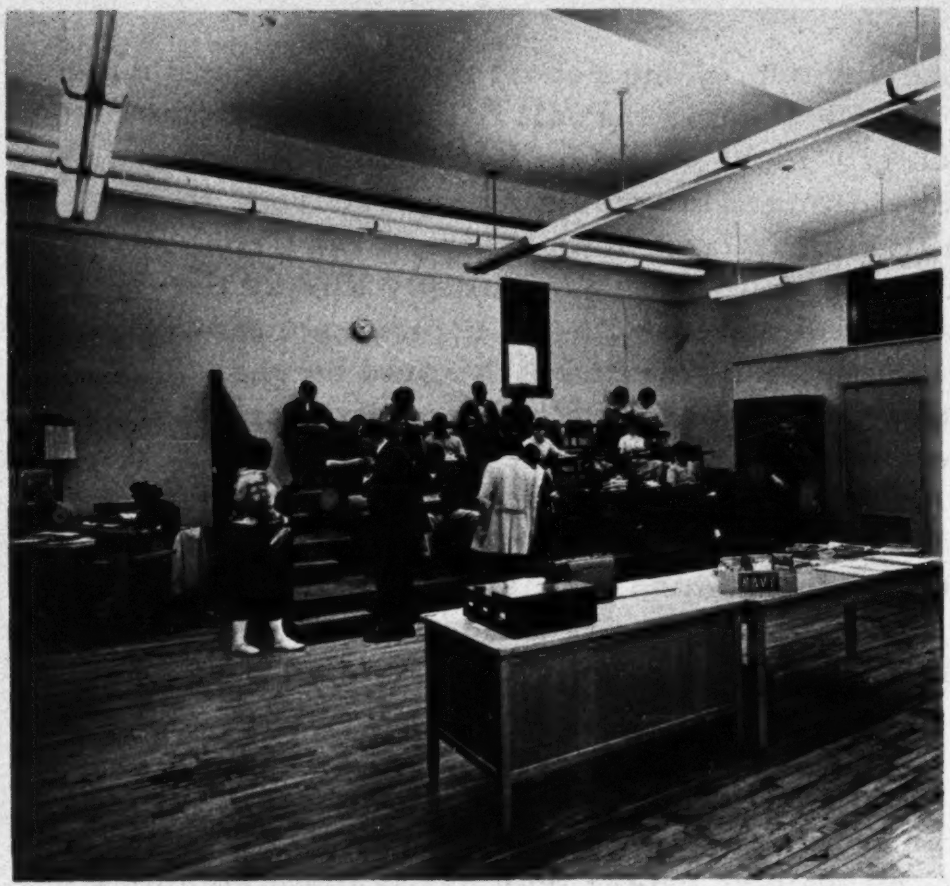
I am not on a campaign to save all the old schools in this country. Far from it. I have seen some -- many -- I will gladly lead the steel ball swinging brigade in destroying. And good riddance. However, I have found in this brief time during the preliminary stages that we are fooling ourselves if we think we are going to replace all the old schools in this country within the next five or so years. Any every day more schools -- more classrooms -- become older. It is my hope that this study -- using this workshop as a take-off point -- can turn a creative spotlight on the 35,000 instructional rooms in the 15 Great Cities and come up with some suggestions which will maybe help us and other districts with whom we will share our ideas help our youngsters and our teachers find something beautiful in their classrooms.

It is recommended that we consider architectural competitions or pilot study projects using the best design talent we can find -- our Phase II. In those cities wishing to participate, the Research Council Project Director would work with them in selecting the building, or part of the building, they would like to put up for competition. In this way we could make certain we have a wide representation of types, which would include elementary, secondary, junior high schools, as well as the possibility of a concentration on specialized areas such as athletic facilities, home economic facilities, and so on. Working with the individual city's school administration and with locally invited architects, the competition would be run under the rules set forth by the American Institute of Architects. As Project Director, I would help set up the competitions and to coordinate the various elements. It would be hoped that any building selected for competition would use, if at all possible, the winning design as part of an actual project. The prize monies paid would apply to the architectural fee of the winning design. All designs submitted in each of the cities would be used in the publication of a series of renovation idea reports as a Great Cities "idea library" on the subject -- one report per city -- our Phase III of the project. Let us assume that all fifteen cities participate and that in each city there would be five architects invited into that city's competition. This would mean that from each city we would have five ideas from top architectural firms -- the winning entry plus the four others. Multiply this by the fifteen cities and we would end up with 75 inspired solutions to renovation in our total "idea library" which could be shared by all of the Great Cities, as well as by all school districts in the United States requesting this information.

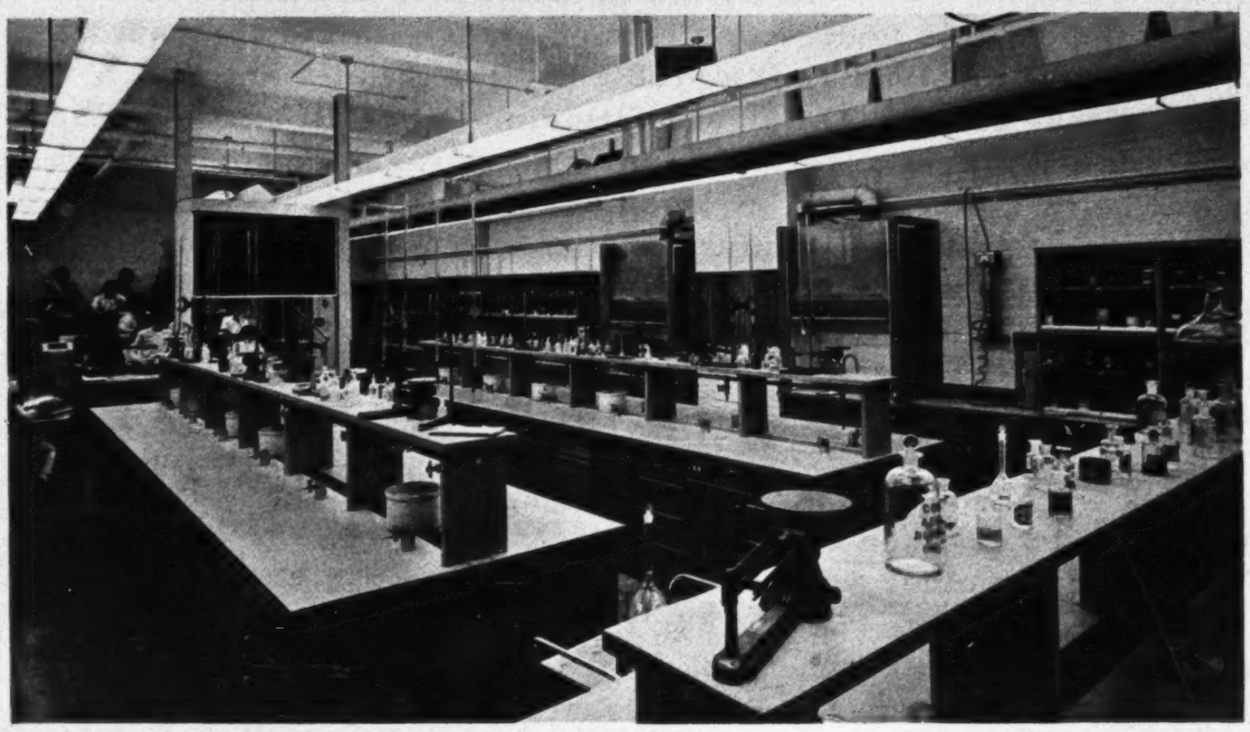
Another possible approach and one that some cities might prefer, would be the design seminar, where we bring together some of the bright lights in the facility planning field and "lock them up" for a week-end or a week with a problem and see what they come up with.

It is proposed we plan a few regional conferences on the problems involved in renovation. This would give us an opportunity to visit, say, Milwaukee where they are doing a complete renovation program in their schools, meet with the people involved, tour the schools, see -- like I did in Milwaukee and other cities -- some of the schools under construction, talk with the contractors and architects involved on the problems, the pitfalls and the shortcuts they found. The Great Cities meetings, like the Spring Conference, present excellent opportunities for such approaches. We will be in Los Angeles in November and are working toward that date for a field-trip conference, as well as progress reports on the materials for the "idea library." Tied in with these educational facility field trips will be visits to other building type renovations in the area to broaden the scope of our knowledge on the subject.

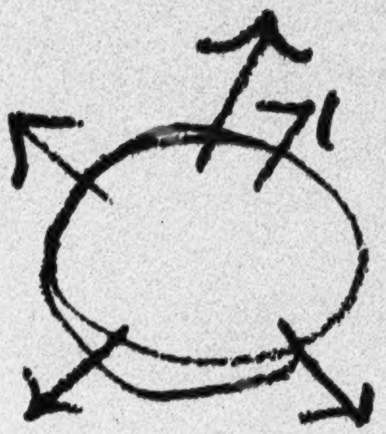
This workshop was just the breathing point of Phase I. It is time for us to move on to actual projects and throw the creative spotlight on our older schools. As someone on the New York school board told me, "If you don't have seats for children, you simply have to keep the building." It is hoped that we will not only keep the building, but will approach its renovation in such a way that the community sees it as a symbol that we think education is important for all our children. What better group to lead the way than the Great Cities?



**Chemistry laboratory is converted to guidance offices in the McKinley High School in St. Louis. The stepped seating remains for audiences for group counseling or talks from business or armed forces representatives. Remainder of room is partitioned for private counseling.**



**In same school, completed in 1903, a former exercise gymnasium is converted to a chemistry laboratory. Note how chalkboard gives feeling of separation between lecture and laboratory area. Office at this end, out of picture, is used for instructor's office and preparation laboratory.**



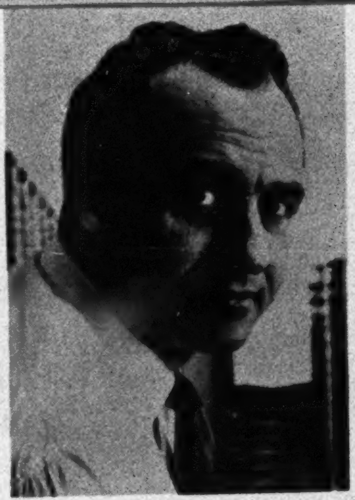
## THE CONTRACTOR LOOKS AT REMODELING

Harry Gillies
Gerace & Castagna
General Contractors

Liam Dalton
Segner & Dalton
Mechanical-Electrical Engineers

Anthony Nassetta
Weiskopf & Pickworth
Structural Engineers

Bernard Reissman
H. Sands Company
Heating and Ventilating Engineers



By Harry Gillies, Gerace & Castagna, Inc.
General Contractors
Manhasset, L. I., New York

I think the general contractor's attitude toward the remodeling of an older school building was expressed by my associate, Frank Castagna, when he reacted to my question with an explosive "Bull-doze it!" He undoubtedly had in mind the difficulties of estimating the costs of doing such work, the unforeseeable conditions that occur during the work. the difficulties of scheduling the work for maximum labor productivity, and the almost inevitable delays that creep in and increase costs.

However, the fact is there are many fine older buildings with functional and economic utility, and the problem is how to achieve maximum utility at least cost. For the purposes of the workshop, I feel that emphasizing a few major points, based on personal experience, is preferable to going into too much detail. Here they are:

1. Save only those buildings that originally were well designed and constructed, and in which current fire and safety standards can be incorporated at minimum cost.

2. After the building is programmed, and schematic plans and outline specs prepared, have your architect and engineers separate the work into its component units, and prepare a phased construction schedule, including time and cost element.

3. Prior to authorizing complete plans and specs, determine whether any portions of the work can be done by your own forces. If possible, and this will depend upon the size and complexity of the project, as well as on the capability of your employees, act as your

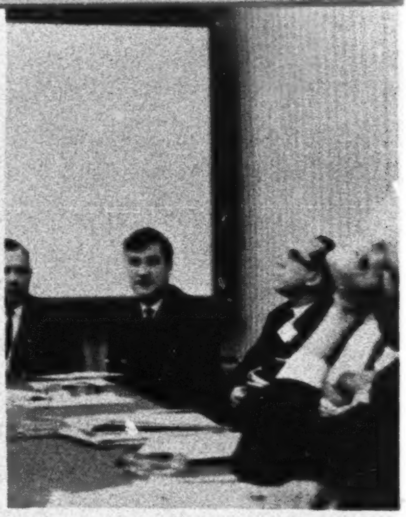
own general contractor and perform your own carpentry, masonry, and general labor. Floor tile, acoustic ceilings, painting, non-load bearing partitions are examples of the work you can do with your own staffs.

4. For work that is too technical or too much for your own forces to handle, have your architect-engineer prepare detail plans and specs for competitive bids.
5. Before taking competitive bids on any phase of the work, perform as much demolition work as possible with your employees, so that the bidder has as much information as possible about existing conditions.
6. Work closely with your architect-engineer in coordinating and timing the various phases of the work. Have him assign a man to the job who can make field decisions on the spot. In this way, your forces can work from basic design drawings, supplemented by typical details, thus saving you the cost of fully detailed drawings on the work you perform yourself.
7. Avoid to the maximum extent any remodeling or alterations while the building is occupied or in use, especially by children for school purposes.

-*-*-*- -*-*-*- -*-*-*-

"If a building has no incorrectible critical defects; if pressure for its abandonment is based on social pressures rather than educational quality; if the building's loss would be a divisive influence in the community; and if modernization rather than replacement would serve the real best interest of the district, the building should not be replaced. It is seldom indeed that a unanimous decision can arise from this criteria. One board member's 'decaying neighborhood' can be another's potential 'Society Hill'; one man's insuperable traffic problem is another's mild annoyance. Decisions are of necessity based on evaluation rather than absolutes."

--Martin S. Harris, Jr., Engelhardt, Engelhardt & Leggett, Educational Consultants



# REPORT

By Liam Dalton, Segner & Dalton
Mechanical-Electrical Engineers
White Plains, New York

It is not possible in a relatively short time to do more than skim the surface of the three areas assigned to me to discuss; namely, heating, plumbing and electrical. I hope that by touching on some considerations of each, we can generate a discussion which will allow us to develop those topics which are of particular interest. Remember that the mechanical and electrical contract takes 30-35 cents of the construction dollar for new schools and can amount to as much as 60 cents of the construction dollar for remodeling.

As a point of departure I propose to deal with an imaginary building similar to the type we have encountered in our work over the last ten years. It is a multi-story masonry building with floor-to-floor heights of 15'0" and large operable windows about 30-40 years old.

First we look at the heating system. It consists of a steam system with cast iron radiation. The boilers are old, but quite generously sized by modern standards. Depending on maintenance standards as it is 30-40 years old, it is in need of replacement. It may be firing No. 4 or even No. 2 oil and is probably quite inefficient at this stage. The impact of this efficiency can be quite significant in terms of dollars. For example, by changing from No. 2 to No. 6 oil, the fuel bill can be dropped from anywhere between $18,000 and $10,000 per annum.

Assuming the decision is to replace the boiler, based on economic grounds, don't simply stay with steam because it exists. You should consider hot water, which is inherently a more efficient heating medium than steam.

It is inevitable that the piping is in poor condition unless the maintenance program has included systematic replacement over the years. While the steam supply line is in fairly good condition the condensate return is increasingly troublesome. Probably all vestiges of insulation have now disappeared.

Temperature control and zoning of the building for exposure and occupancy probably do not exist. The large cast iron radiators are quite uncomfortable because of radiant effect and overheating. Consequently, the windows are opened and closed as the steam comes on and off. The lack of insulation, proper temperature control, open and leaky windows, are all causing fuel loss. The original heating system may have been a well-designed, single pipe system or two pipe vacuum or condensate return, but has probably been modified through the years so that it is no longer a pure system.

If the condition I describe exists in some of your buildings, why not consider converting to a hot water system, because you have to replace the piping in any event. This will eliminate considerable maintenance and give you a better, that is, a more efficient and comfortable heating system.

## VENTILATION

It is unlikely that the building we are talking about has anything more than toilet exhaust. Where supply ventilation does exist, it is undoubtedly out-of-date and we often find has not been run for a long period. To introduce even minimum ventilation to interior spaces, it may be possible to use existing ductwork. This is a possible pitfall, as we have found that sometimes in our efforts to reuse existing ductwork, the final outcome costs more. Classrooms should be ventilated even if it depends on open windows or leakage to provide it. Better still, to provide positive supply, and here the old school has the advantage that in remodeling you will probably lower and provide acoustic treatment in the corridors so that there is usually plenty of space for horizontal runs of ductwork.

Another solution to the ventilation problem is the use of unit ventilators, but this requires chopping holes in the exterior wall which may be structural and aesthetic problem.

To summarize heating and ventilating, it is recommended you:

1. Check that you use the most economical fuel, and this means the various grades of oil, natural gas and electricity.

2. Check your boiler system and your distribution piping. If they are 30-40 years old and a constant source of maintenance headaches, they should be completely replaced.

3. If you presently have steam, consider changing to hot water.

4. High corridor ceilings and possible attic spaces in old schools do not make it too difficult to add ventilation. Your final system might be a simple convector at the exterior wall, with an individual thermostat in each room and a supply of tempered air from the interior.

## PLUMBING

In our analyses of plumbing systems, we depend greatly on maintenance records. The keeping of records in all mechanical systems is very important. An example would be a recent hospital where we were told that Type M copper tubing fails in about 8-10 years, where we would expect it to last 30 years. Rather than treat the entire water consumption of the hospital, we used Type K copper, and recent tests, after four years of installation, have shown it to be standing up very well. In the old school we are talking about, it is likely that we have to replace after 30 years the aboveground water and vent lines and storm and waste drainage unless wrought iron, cast iron or copper were used originally. It is more likely that galvanized steel was used, in which case replacement problems will have already arisen and portions will have been replaced by the custodial staff. You should, however, cut sections out of piping and have them analyzed in case corrosive elements, and not age, are the problem.

It is not uncommon to find inter-connections between hot and cold water lines where work has been carried out over the years, and this, of course, wastes fuel. Probably the water heater has to be replaced, and the present availability of high recovery hot water heaters which can fit through small spaces does not always mean that they have to be cut up and assembled in place.

It is not unusual to find existing tanks are leaking. Rather than replace them, we have been quite successful in having them cement-lined and they will last at least another 10-15 years. In your cities, there is usually a considerable amount of sulphur dioxide in the air, and so steel roof leader piping will have been eaten away. If cast iron were used, it is less likely that replacement will be necessary.

In regard to plumbing fixtures, it is probable that a major modernization program will require that toilets be replanned, in which case modern fixtures would be installed using the old stacks. If there is no extensive replanning of toilets, it is possible to get modern fixtures modified to fit exactly on the old roughing. We have found the fixture manufacturers most cooperative, particularly where there are quite a number of fixtures involved for this type of modernization. Needless to say, if they fit exactly on the old roughing, considerable monies are saved.

One last point involves the improvement in technology which allows the replacement of water storage tanks with variable speed pumps. This device can often free up considerable space presently devoted to these tanks.

## ELECTRICAL

The electrical can be broken down into the following sections:

a. Service
b. Main switchgear
c. Wiring and panelboards
d. Lighting and convenience outlets
e. Signal systems

Usually, the service is adequate, based on the metered demand figures which are available from the power utility. In addition, the service equipment can quite probably be retained with some modifications to meet up-to-date codes. For example, the subservice tap to feed fire alarm and exit lights may not exist. After 30 years you may anticipate rewiring everything from the service out. (I am discounting the projects where DC to AC conversions are required.) In addition, the old fused panelboards with open busses located in the corridors are hazardous and should be replaced using circuit breaker types.

Incandescent lighting is substandard and has to be replaced. Without going into the argument about classroom lighting levels, it is sufficient to say that an absolute minimum is about 35 footcandles where the existing can be as low as 5-10 footcandles. By simply replacing the existing incandescent fixtures with the same wattage of fluorescent, the level can be increased 2 1/2 times. When you add the extra capacity allowed in rewiring existing conduits, it is often possible to achieve 35 footcandles without added conduit work.

There is, however, usually a deficiency in the number and placement outlets for projector and other audio-visual equipment. Here again, the introduction of lowered ceilings in the corridors facilitates running new circuits. The run out from the corridor line to the locations desired in the wall is more difficult to conceal. Here, however, if new partitioning is introduced, or if acoustic tile is being provided in the classrooms, this can be accomplished quite simply. The use of metal stud partitions facilitates this work.

The fire alarm system has to be brought up to acceptable standards. This is usually quite easy to accomplish, unless the manufacturers of the system are no longer in existence. As most of the work involved, such as placement of bells and pull stations, is in corridors, the hung corridor ceiling makes it simple to achieve.

The other systems which are standard in new schools, such as corrected clocks, intercom telephones, public address, intrusion alarms, antenna systems for open and closed television, can be introduced relatively inexpensively if you are willing to accept the outlets for these items on the corridor wall of the classroom. While this is quite satisfactory for clock, speaker, intercom, and telephone, it is not a good location for the television outlet, which should be at the window wall.

Other areas of electrical modernization are the auditorium where dimmer systems and stage lighting have progressed considerably in recent times. In addition, the older equipment often proves to be quite hazardous due to the open construction. The introduction of this type of equipment and scoreboards in the gym, in addition to individual sound systems in these areas, will depend largely on the degree of modernization that is undertaken.

Finally, there is much interest in electrical heating stimulated by an extensive advertising campaign by the utility companies. This should be of particular interest to the school which is considering modernization of its complete heating system. The reasons are that complete rewiring has to be undertaken in any event, because cable insulation deteriorates to replacement level in about 30-40 years.

Electrical work is more flexible than heating work, in that pitches do not have to be maintained, high points do not have to be vented, and it is not only acceptable, but desirable to permanently bury the piping. It is my opinion that a well-constructed old building does have the necessary insulation levels to justify serious study of this possibility, and the only problem would likely be with the extensive window replacement that would be necessary to reduce the infiltration load. The decision is, of course, one of economics, and the fuel analysis which your engineer prepares for you should determine the feasibility or otherwise of this possibility.

The mechanical and electrical rehabilitation of a school has to be carefully planned and should not be carried out "piecemeal." If you wish to use your maintenance staff, have complete drawings prepared and let your staff do whatever they can, consistant with the total picture.

-*-*-*-　　-*-*-*-　　-*-*-*-

"The welfare of our citizens depends on our cities being able to provide a satisfactory environment in which to live and work, as well as on the adequacy of employment opportunities. Both of these conditions are adversely affected by deterioration which saps the vital organisms of the city."

--David Rockefeller, President, Chase Manhattan Bank

# REPORT

By Anthony Nassetta, Weiskopf & Pickworth
Structural Engineers
New York, N. Y.

Unlike wiring, plumbing, heating systems, windows, doors, roofing and finishes, etc., the structural framing system of a building does not "wear" out. Generally, if deterioration through damage or severe exposure has not occurred, a building is as structurally sound today as the day it was built.

Structural considerations do not, as a rule, become important factors unless structural changes, such as elimination of columns or bearing walls, addition of a penthouse or story, increasing floor load capacity, etc., are required by the program of remodeling.

When, however, modernization involves structural changes there are many factors which should be considered.

Age of Building and Time of Initial Construction - School buildings which will come under consideration for modernization in the near future will most likely fall into three age groups:

Buildings built prior to 1900,
Buildings built between 1900-1920, and
Buildings built between 1920-1940.

Structurally, buildings built prior to 1900 should not be seriously considered for remodeling. All timber or timber and masonry bearing wall structures with extremely limited remodeling capabilities are likely to be encountered. Updating to meet modern city building codes will undoubtedly outweigh all other considerations.

Buildings built between 1900-1920 are likely to be constructed with masonry bearing walls, cast-iron columns, built-up steel girders, and brick cinder concrete, or flat tile floor arches. Foundation walls and footings are likely to be massive stone and brick. Fire-resistive ratings may be questionable and far below modern standards. Limited structural remodeling is feasible, but extensive remodeling may be extremely difficult for buildings in this age group. Upgrading fire-resistive ratings to meet modern building code requirements may prove to be a costly consideration. In buildings built between 1920-1940, rolled steel beams, girders and columns, concrete floor slabs, masonry bearing walls, bar joist systems, all-reinforced concrete framing systems are typical structural systems likely to be encountered. Fire-resistive ratings are likely to be adequate and foundation walls and footings are likely to be reinforced concrete. Extensive remodeling for buildings in this age group is quite feasible. Structural remodeling is relatively simple in the all-steel framing systems, but much more difficult in the all-reinforced concrete framing systems.

Pitfalls and Danger Signals - Once a program of modernization including structural remodeling is decided upon, several important pitfalls and danger signals require careful attention.

1. Fire-resistive ratings - Existing ratings and effect of remodeling on ratings should be evaluated and approval by regulatory authorities obtained at the earliest possible time.

2. Structural deterioration - Nature and extent, if any, should be identified and corrective work established regardless of program. Look for moisture penetration in walls and roofs, sagging floors, sticking windows and doors, and serious cracking of floors and walls.

3. Floor and roof load capacity - Existing floor and roof load capacities should be determined and compared with proposed load requirements, especially where conversion of spaces is under consideration.

4. Structural steel frame - Existing steel frameworks are relatively easy to reinforce, alter and re-frame through the techniques of welding and high strength bolting. To achieve maximum economy, the welding qualities and yield points of the existing steel should be determined. Connection capacities, and column base plates and footing capacities should

not be overlooked, particularly when increasing capacities of floors and columns.

5. Reinforced concrete frame   Existing reinforced concrete frameworks are relatively difficult to reinforce, alter and re-frame. Modification can be accomplished through the introduction of structural steel members, but often the range of such modification is extremely limited. Determination of actual concrete ultimate strength by core testing and determination of physical properties of reinforcing steel sometimes permits engineering re-evaluation. Such re-evaluation could result in higher floor and column capacities without the need for any modification. Footing capacities should not be overlooked when increased column capacities are a consideration.

6. Piles or Spread Footings - Remodeling of pile foundations to increase capacity is apt to be very tricky and generally is limited to the perimeter locations of buildings. Buildings with spread footing type foundations are more readily suited to underpinning in both perimeter and interior locations. New spread footings can easily be installed to support new or relocated columns.

7. Ground Water - Existing basements that are designed to withstand hydrostatic uplift pressures and completely waterproofed are not subject to simple remodeling. Undermining of existing footings during pumping operations, restoring the integrity of the existing waterproofing systems, etc., are some of the problems to be expected when remodeling basements subject to ground water.

8. Lateral Bracing - Remodeling of structural frameworks in which removal of columns, cutting of large floor opening, shifting bearing walls, or enlarging wall openings are contemplated, require special attention. Weakening of the lateral bracing

systems for resisting wind and seismic forces must be carefully evaluated.

9. Scheduling - Structural remodeling is apt to require heavy, cumbersome construction equipment. Scheduling these operations during periods when building is partially or entirely vacated is a prime requirement.

Cost Saving Tips and Advice - Several helpful hints when structural remodeling is under consideration are:

1. Always consider steel when remodeling: steel framing, steel floor deck, steel siding.
2. Convert interior spaces or add penthouses to increase mechanical areas.
3. Avoid enlarging or deepening basements for mechanical areas.
4. Consider adding a story to an existing building when parapets roofing and roof fills can be omitted to reduce dead load. (Added story should be of lightweight steel construction.)
5. Obtain as-built drawings and make accurate field measurements and determinations prior to design.
6. Field changes to steel, once fabricated, can be very costly. Steel costs can vary from $.15 per pound to $1.00 per pound, depending almost entirely on field labor costs.
7. Keep stair and elevator alteration to a minimum.
8. Structural remodeling costs should never exceed 20 to 25% of total cost.
9. Avoid underpinning building on piles.
10. Use only architects and engineers with long and proper experience.

# REPORT

By Bernard Reissman, H. Sand & Co., Inc.
Heating and Ventilating Engineers
New York, N. Y.

A famous public speaker offered as the secret of his success: "First, you think up a good beginning; secondly, you think up a good ending; and then you keep them as close together as possible."

This is not easy today. I have been allotted approximately fifteen minutes to discuss a subject that could take fifteen hours.

My company has been the mechanical contractor for every conceivable type of construction, both new and modernization, such as: office buildings, department stores, sewage disposal plants, housing and, of course, schools.

We have been the low, successful bidder for over thirty New York City public schools since 1960. So far, I know we were the low bidder. When all of these jobs are finally completed, only then will I know how successful we have been.

The pitfalls and problems of renovation work differ considerably from those of new construction. I won't compare both new and old now, but will deal briefly with our approach to estimating and construction in connection with a modernization contract.

## A. ESTIMATING

First of all, we give the plans and specs to our estimating department. We have people skilled in school construction.

Estimating is a costly part of a contractor's business, for good estimates keep us in business. No comment is required regarding inaccurate estimates. Our problem revolves around the following:

1. Plans are seldom as good for a modernization contract as for a new building. The engineers cannot foresee all of the problems.

    a. Whenever (as always) a "grandfather clause" is in a modernization contract, we grow wary.

2. More time is required of the estimator because of costs peculiar to existing buildings, such as:

    a. Cutting
    b. Patching
    c. Tie-ins to existing piping and ductwork
    d. Site inspection
    e. Coordinating various sub-contractors to make sure that a bid is all inclusive.

The time schedule is very important and the phasing of construction; for example, will the building be vacated? Horizontal construction, or vertical construction? All these factors are considered when submitting an estimate.

### B. PURCHASING

This does not present any unusual problems as between a new or old building other than an effort to provide, if possible, similar equipment and manufacturers to existing equipment.

### C. EXPEDITING

This is more of a problem and a costly one. In a new building a construction schedule, if prepared with the cooperation of all trades, can be maintained. In an existing building we find three types of construction phasing:

1. Vertical - that is where a wing is to be modernized -- we can install risers etc, with a minimum of difficulty.

2. Horizontal -- this creates a problem from the heating standpoint, because we must install risers through to the upper floors before we can heat the lower ones.

3. Vacated - when a building is vacated, life is simpler, but still more costly than for a new building.

In essence, if a construction schedule requires either horizontal or vertical phasing, each phase is the equivalent of a complete contract within itself. Materials must be scheduled for each phase.

D. CONSTRUCTION - in existing buildings

1. Material handling is more costly.

2. Boiler room renovations can normally be done only during the summer months up to October 15th.

3. Storage area is at a premium and seldom adequate. Vandalism and pilferage are costly and time consuming.

4. Prefabrication is less advisable because one never knows the interferences to be encountered until walls are opened.

5. Change-orders are more frequent. Owners find them "distasteful"; contractors find them "fruitful."

6. Public liability and property damage insurance. Children are inquisitive; claims are more frequent.

RECOMMENDATIONS:

1. Give us better plans. This will save time and money.

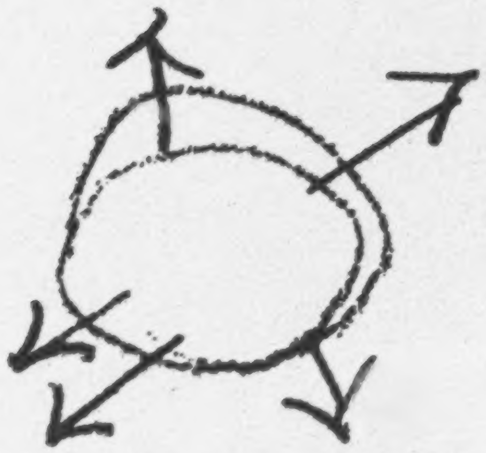
2. Prequalify all contractors, not solely on their ability to

secure a bond, but on past performance as well. Prequalification guarantees only good bidders, fair prices. Under a single contract system, we would not bid school work.

3. Separation of contracts under a single bid - a general contractor does not understand mechanical systems and buys from the cheapest sub-contractor.

4. Phase the construction contract with the cooperation of the major subs; at present we are normally presented with a schedule that is seldom adhered to.

5. Evacuate the building, permitting vertical construction rather than horizontal, if possible.

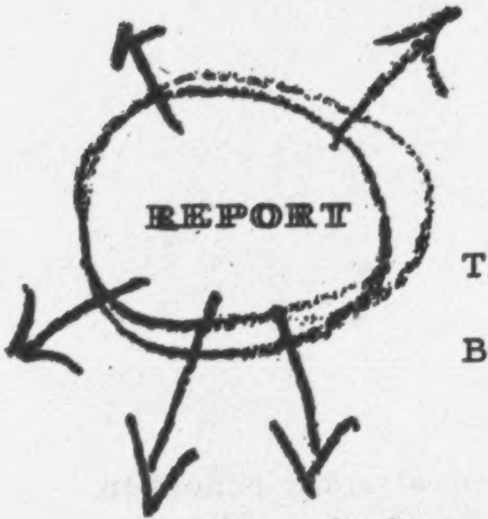


## A LOOK AT THREE PROGRAMS

MILWAUKEE
Howard M. Aker
Assistant to Superintendent

SAN FRANCISCO
Wilbert G. Vestnys
Assistant Superintendent

BALTIMORE
Ambrose J. Chlada, Jr.
Assistant Superintendent



# THE MILWAUKEE MODERNIZATION PROGRAM

By Howard M. Aker
Assistant to Superintendent

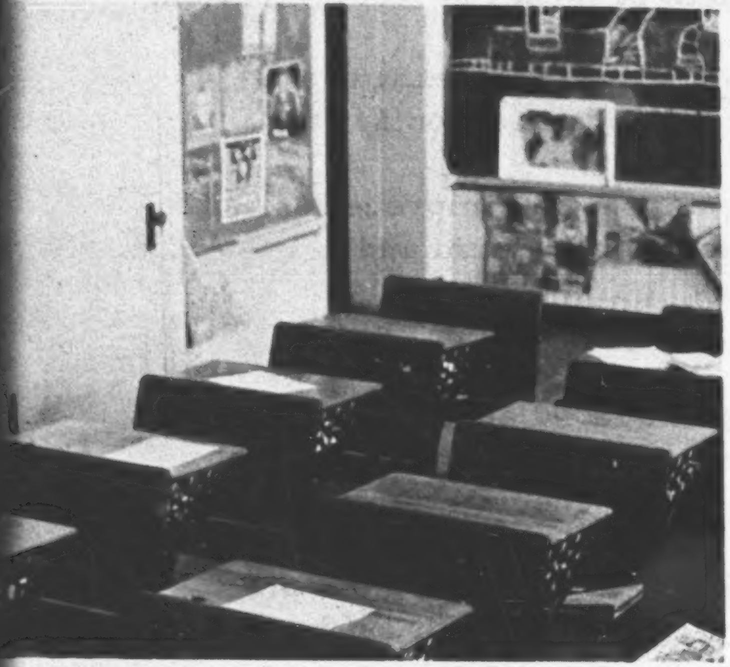
A planned program of school building modernization was approved by the Milwaukee Board of School Directors in 1957. Since that time, a three-pronged attack on obsolescence has been developed:

1. The scheduling of fifty elementary schools, aged 40 - 80 years, for a complete program of modernization.
2. An annual program of Major Projects to expand and improve facilities in older secondary schools.
3. An expansion of budget allowances for improved lighting, acoustical treatment, fire alarm and stair enclosure installations, cork-boarding, furniture replacement, landscaping, etc.

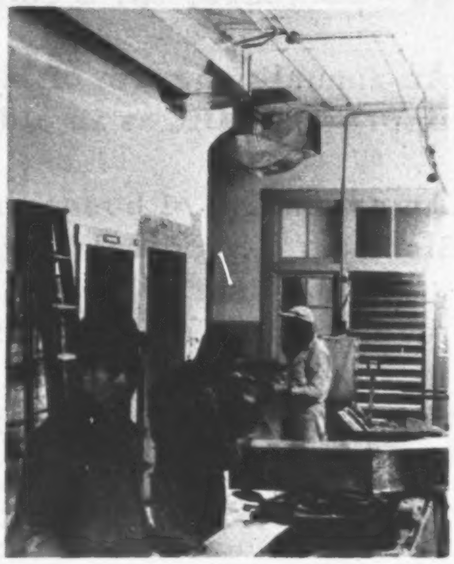
We now budget approximately $1,500,000 annually to carry out these programs. At the close of 1965, modernization will be completed in twenty-eight elementary schools. Four elementary schools are scheduled each year, which will extend the program to 1970. (On the next page is an excerpt from a progress report on the modernization program made in 1963 with some typical cost data.)

Modernizing schools requires more than the technical skills and manual labor involved in converting older classrooms into up-to-date ones that are (a) more adaptable to modern educational programs and practices, (b) safer, and (c) more attractive. Before building activities can be started, surveys of needs must be taken and plans laid in consultation with the principals concerned. Administrative arrangements must provide for the transportation of pupils who will be housed temporarily in other schools. Teacher assignments must be shifted, too. Supplies and equipment must be delivered to the places where the teachers and their classes will be located. In some cases, social center activities must be discontinued during school modernization.

Typical older school in Milwaukee -- this one built in 1887. The city now has a budget of approximately $1,500,000 annually to add years of life to schools like this.



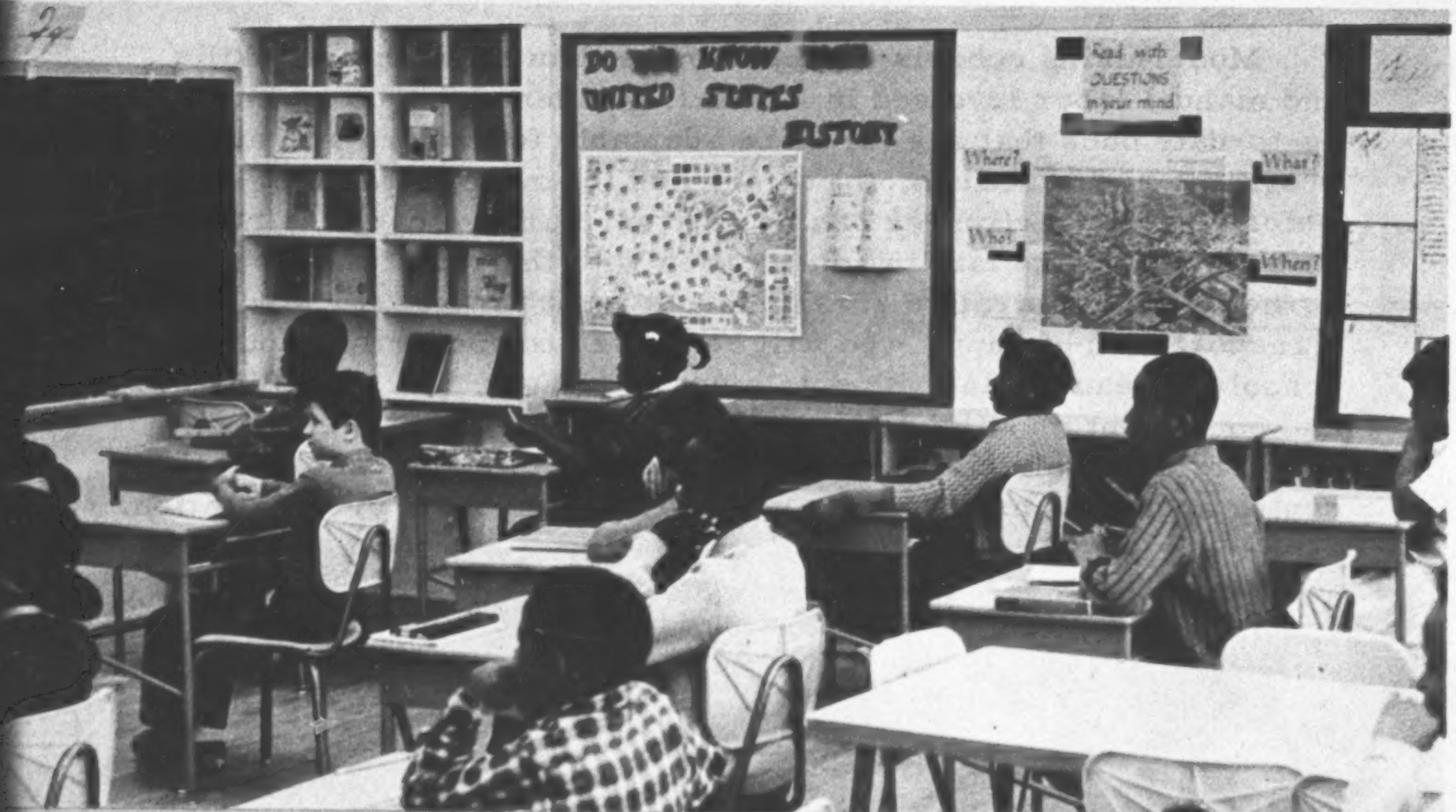
Before



During

Four elementary schools are scheduled for renovation each year, which will extend the program to 1970.

After



DO YOU KNOW YOUR UNITED STATES HISTORY
Read with QUESTIONS in your mind
Where?
What?
Who?
When?

## PROGRESS OF MILWAUKEE SCHOOL MODERNIZATION PROGRAM WITH COST DATE

(All are elementary schools)

| School (Orig. Age) | Building & Equip. Cost* | Square Feet | Cubic Feet | Cost Sq. Ft. | Cost Cu. Ft. | No. of Cl. Rms. | Cost Cl. Rm. | Modernization Occupied |
|---|---|---|---|---|---|---|---|---|
| Mound (1886) | $172,213 | 39,871 | 725,249 | $4.31 | $0.24 | 15 | $11,480 | March 1959 |
| Fratney (1903) | 154,676 | 45,238 | 724,683 | 3.41 | 0.21 | 16 | 9,667 | Sept. 1959 |
| Dover (1893) | 315,234 | 66,629 | 948,678 | 4.73 | 0.33 | 24 | 13,134 | April 1960 |
| 12th Street (1895) | 202,317 | 47,938 | 646,708 | 4.22 | 0.31 | 16 | 12,644 | June 1960 |
| Longfellow (1886) | 315,830 | 71,421 | 1,063,809 | 4.42 | 0.30 | 20 | 15,791 | October 1960 |
| 5th Street (1888) | 232,529 | 58,009 | 809,661 | 4.04 | 0.29 | 17 | 13,678 | January 1961 |
| Mitchell (1894) | 302,495 | 90,706 | 1,229,624 | 3.34 | 0.25 | 24 | 12,603 | April 1961 |
| Kagel (1891) | 252,109 | 52,519 | 936,148 | 4.79 | 0.27 | 17 | 14,824 | June 1961 |
| Auer (1903) | 208,503 | 60,560 | 767,261 | 3.44 | 0.27 | 20 | 10,425 | Sept. 1961 |
| LaFollette (1898) | 225,023 | 56,946 | 795,691 | 3.95 | 0.28 | 25 | 9,001 | Sept. 1961 |
| Trowbridge (1894) | 251,214 | 52,623 | 758,015 | 4.77 | 0.33 | 18 | 13,597 | January 1962 |
| Bartlett (1902) | 157,452 | 38,181 | 504,832 | 4.12 | 0.31 | 15 | 10,497 | February 1962 |
| Maryland (1887) | 273,523 | 47,345 | 705,033 | 5.78 | 0.39 | 16 | 17,095 | March 1962 |
| 20th Street (1902) | 270,777 | 44,728 | 698,123 | 6.05 | 0.39 | 20 | 13,539 | April 1962 |
| Lee (1892) | 279,927 | 69,313 | 885,750 | 4.04 | 0.32 | 21 | 13,331 | January 1963 |
| 37th Street (1903) | 283,071 | 62,555 | 919,873 | 4.53 | 0.31 | 21 | 13,479 | January 1963 |

*Total cost includes building construction, furniture & equipment, architectural fees, and miscellaneous Repair Department work. Square and cubic feet are of complete building.

Source: Business Department, Accounting Division

# THE SAN FRANCISCO PLAN

By Wilbert G. Vestnys
Assistant Superintendent
(Delivered at workshop by Adolfo
de Urioste, Board President)

"A low, rumbling noise, a savage succession of twists, a rocking motion to the north and south, a cessation of an instant and now a twist and shake, as of the earth in agony and then the monstrous quake - - -.

"Then came the season of the awful silence ---and then, out of the silence, and the toppled buildings, and the ruined palaces, and the dismal hovels came the besom of flame.

"Three hundred thousand people are without bed or board. Three hundred thousand people listen to the distant thunder of dynamite. There is no water and the flames must be stayed by counter destruction."

This was San Francisco of 1906 as described by Pierre N. Beringer in the Overland Monthly of this city.

Out of 74 school buildings, 29 were burned to the ground. The Girls' High School was destroyed by the quake. In order that there might be a minimum of interruption of the educational program, the San Francisco school district built or secured 36 temporary buildings of 256 rooms for 8,000 children. School was opened in July 1906, with an enrollment of 24,549 as compared to a number of 38,373 before the quake. As of June 1908 there were nine new schools, either under construction or completed, with 37 temporary structures still in use.

During the years 1908 - 1913 the City of San Francisco constructed thirty-three permanent elementary schools. The need for these new buildings was the direct result of the 1906 disaster. Other elementary school building periods during the following years were: 1921-27 (21 buildings), 1952-56 (24 buildings), 1956-69 (8 buildings).

During the past fifty years the educational program has changed, both in content and in method. Yet very little building reconstruction occurred during this period. Five elementary schools were replaced in the 1948 and 1956 building programs. One elementary school was abandoned to freeway construction. Much of the bond funds were directed toward construction of new schools at new locations and replacement of temporary schools.

The San Francisco story is the same as in many other cities. Heavy growth in concentrated periods and only enough money to meet the demands of new population growths, but never enough money to replace or modernize obsolescent school buildings.

With a large number of over-age school buildings in obsolescence, board members and school administrators of the San Francisco Unified School District, are, and will continue to be, faced with this most important problem - when to modernize and when to replace a school building. Can the physical shape of the structure be remodeled to fit the new (and changing) educational program? Will the remodeled building perform as well as a new building? Are the other parts of the school plant (the site location, play areas, operational units, etc.) in a state of educational obsolescence? Will the dollars spent for modernization meet the educational needs for the next 10, 15 or 30 years? Or is modernization only shallow surface treatment? School officials must seek answers to these questions in their review of the value of existing over-age school buildings.

Continued modernization of a school plant only delays its replacement or abandonment. The replacement during any one year of the fourteen schools constructed in 1911 would place a tremendous burden upon taxpayers of San Francisco. A plan for modernization must be interrelated with the ability of the school district to finance a program of replacement of obsolescent school buildings.

A program of modernization and replacement of approximately 100 school buildings in San Francisco is now being planned so that a specific number of buildings will be replaced each year with a budget which can be supported by the school district.

Before discussing the plan for school modernization, rehabilitation or replacement, it is necessary to define these terms for a common understanding of the problem. The following definitions will suffice for the purpose of this report.

a. Replacement - A school building should be replaced when it cannot be reconstructed economically or physically to house a modern educational program. Educational obsolescence takes precedence over all other forms in importance.[1] Age, in itself, is not a requirement for replacement. But along with age one finds the physical deficiencies of inadequate lighting, poor acoustic values and increasing costs for building repair. Based upon a probable life extension, a unit cost of modernization may be developed which can be compared with the unit cost of new construction. When the unit cost of modernization exceeds the unit cost of new construction, the school should be replaced.

b. Modernization - Building standards and educational programs have always been in a state of change. At the present time, the change has become so rapid that schools constructed today may be considered obsolescent in 1990. Movable walls, small rooms for seminar instruction, large rooms for coordinated or team teaching are some of the new area standards required by new methods of teaching. Schools constructed in 1950 may be just as educationally inadequate in 1975 as buildings constructed in 1915 are now. Sub-standard lighting and toilet facilities and noisy classrooms and corridors must be observed to realize the great difference between overaged buildings of the past and new schools constructed during the last decade. However, these older buildings should be modernized when such a program will make available to the school district classrooms into which new educational programs will fit, at a unit cost not to exceed that of new construction based upon the possible extended life of the older building.

c. Rehabilitation - Rehabilitation is generally considered the improvement of surfaces (chalk and tack board, flooring, etc.), of lighting, of ceiling (acoustics) and of replacement of damaged or worn equipment. Extensive structural changes are not included in this unit. Schools constructed in San Francisco during the period from 1924 to 1942 are considered educationally and physically sound. The buildings are of reinforced concrete construction. General rehabilitation, with new light fixtures and acoustic treatment, will transform these schools into acceptable modern structures.

---

[1] Page 8 - Minutes of the meeting of the Research Council of the Great Cities Program for School Improvement, November 13-15, 1964.

The Problem - To raise and maintain aging buildings up to present educational standards and to replace obsolete plants in an orderly fashion on a budget acceptable to the school district.

As has been indicated previously, San Francisco is faced with an increasing number of old buildings. These structures are primarily within the elementary division. The junior high school and senior high school divisions are in a relatively good situation. Considerable modernization in shop and science laboratories are in order and minor structural changes are needed in counseling and library units. Replacement of secondary buildings will not be required for some time with the possible exception of partial units of three junior high schools, two of which were constructed prior to 1913.

In the past, replacement of older schools has been delayed in several instances due to the pressing need for additional classroom space. Although the replacement was constructed in three instances, the original building was retained to house an increasing pupil-population. Often modernization of overaged buildings has been postponed when the funds were needed for other problems such as a fire safety program.

In the elementary division there still remains twenty-one school buildings which were constructed prior to 1912. (These buildings are of Type V construction.) Although the classrooms are large, the structural design does not allow for much change in space planning. Most of these schools were recommended for replacement in 1948. Two will be replaced in the present 1964 building program. It is being recommended that the remaining 19 schools be replaced as soon as feasible.

There are 24 elementary schools which were constructed during the years of 1912 to 1924. Several of these should be replaced. The remaining buildings will require major modernization and reconstruction.

Schools constructed since 1924 will require some modernization and rehabilitation based upon a study of each school.

As was previously indicated, to replace all out-dated and obsolescent school buildings during a five-year period would mean that the needs of the other instructional divisions would be neglected. Therefore, it becomes necessary to plan for an orderly and long-range replacement of these structures. It will be necessary to modernize some of these buildings to extend their usefulness until they may be replaced. The following program of replacement and modernization of obsolescent schools is being recommended to the school district and is to be projected over a period of twenty years.

## The Proposed Building Program - San Francisco - 1964-1984

Replacement - During the next two decades, with an apparent stable pupil-population requiring less emphasis on the construction of new schools in new locations, it should be possible to replace a greater number of the old structures. Ten elementary schools are scheduled for replacement during the period from 1970 to 1974. Based upon an average cost of $1,200,000 per school, approximately $12,000,000 will be needed for this phase of the building program. This rate of replacement should be continued until all wood frame structures have been replaced. A total of 30 buildings will be replaced by 1984.

As we stated previously, no replacement of secondary school buildings is anticipated at this time.

Modernization - During the period of 1965-69 approximately 23 aging elementary schools will be modernized and reconstructed except for the ten buildings to be replaced from 1970-1974. Based upon previous experience, $180,000 will be required for the modernization and reconstruction per school. There will be 15 similar projects completed during the period 1970-1974, ten projects completed during the period of 1975-1979, and four during the period of 1980-1984.

Modernization and rehabilitation of secondary schools will be included in the building program during each of these five-year periods. Based upon the 1964 building program, $1,500,000 should be budgeted for each of the junior and senior high school divisons, $400,000 for the City College and $600,000 for the Adult and Vocational Divisions during the same three 5-year periods.

## The Budget - 1964-1984

Taking into account increasing costs of labor and material, the budget required for the elementary building program will average $3,000,000 per year. Adding architectural and other costs to construction costs, a budget of $17,000,000 to $18,000,000 will be needed for each of the five-year periods 1970-74, 1975-79, 1980-84. The budget required for the modernization of buildings in the other instructional divisions should be about $4,000,000 per five-year period. The total building budget of $21,000,000 to $22,000,000 for each five-year period is not excessive and can be managed by the school district.

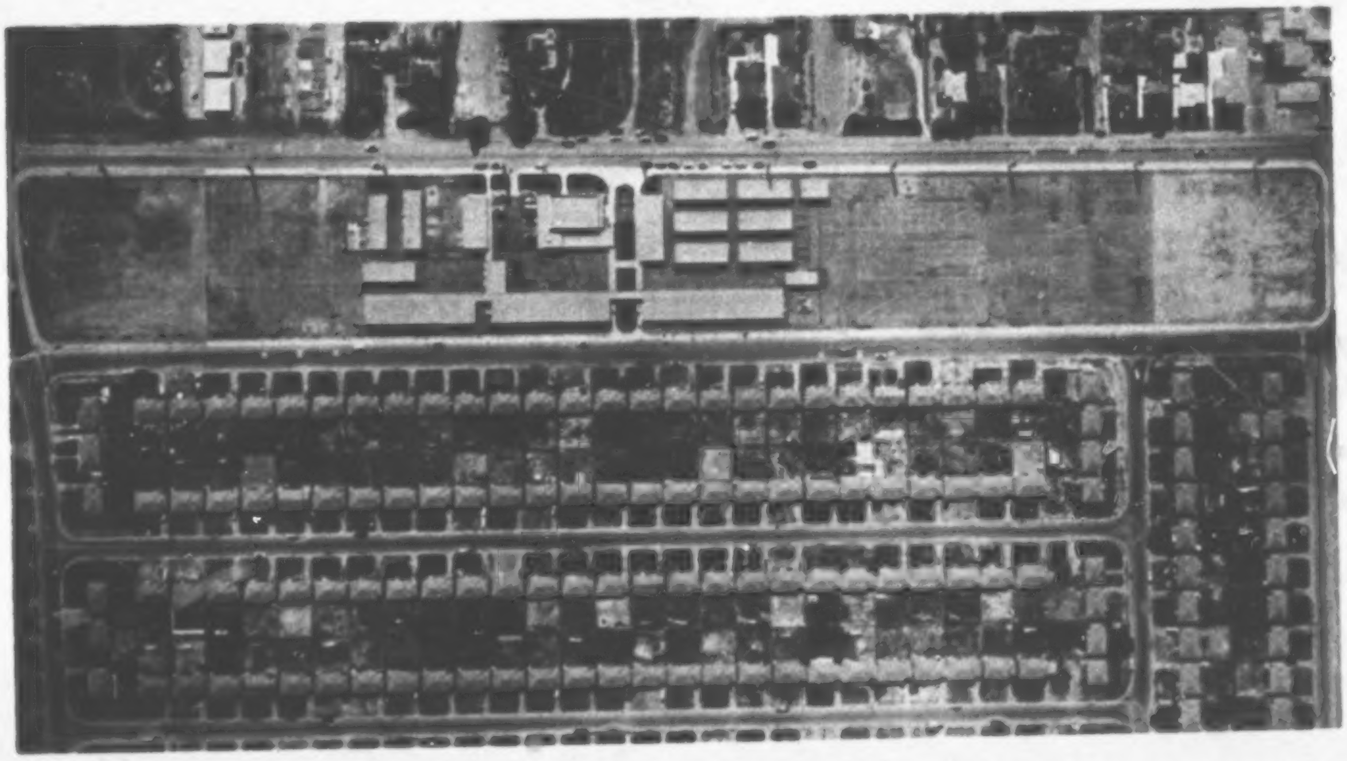
The proposed plan, now being prepared for Board of Education review and approval, will accomplish several points if adopted:

1. It will put into effect a long-range building program which is planned to meet new requirements of the ever-advancing field of education. Reforming the physical shape of the educational areas, replacement of worn-out and out-dated equipment, and the installation and construction of new instructional areas must be on an annual basis, not once every 10 or 20 or even 50 years, as has been the case in the past.

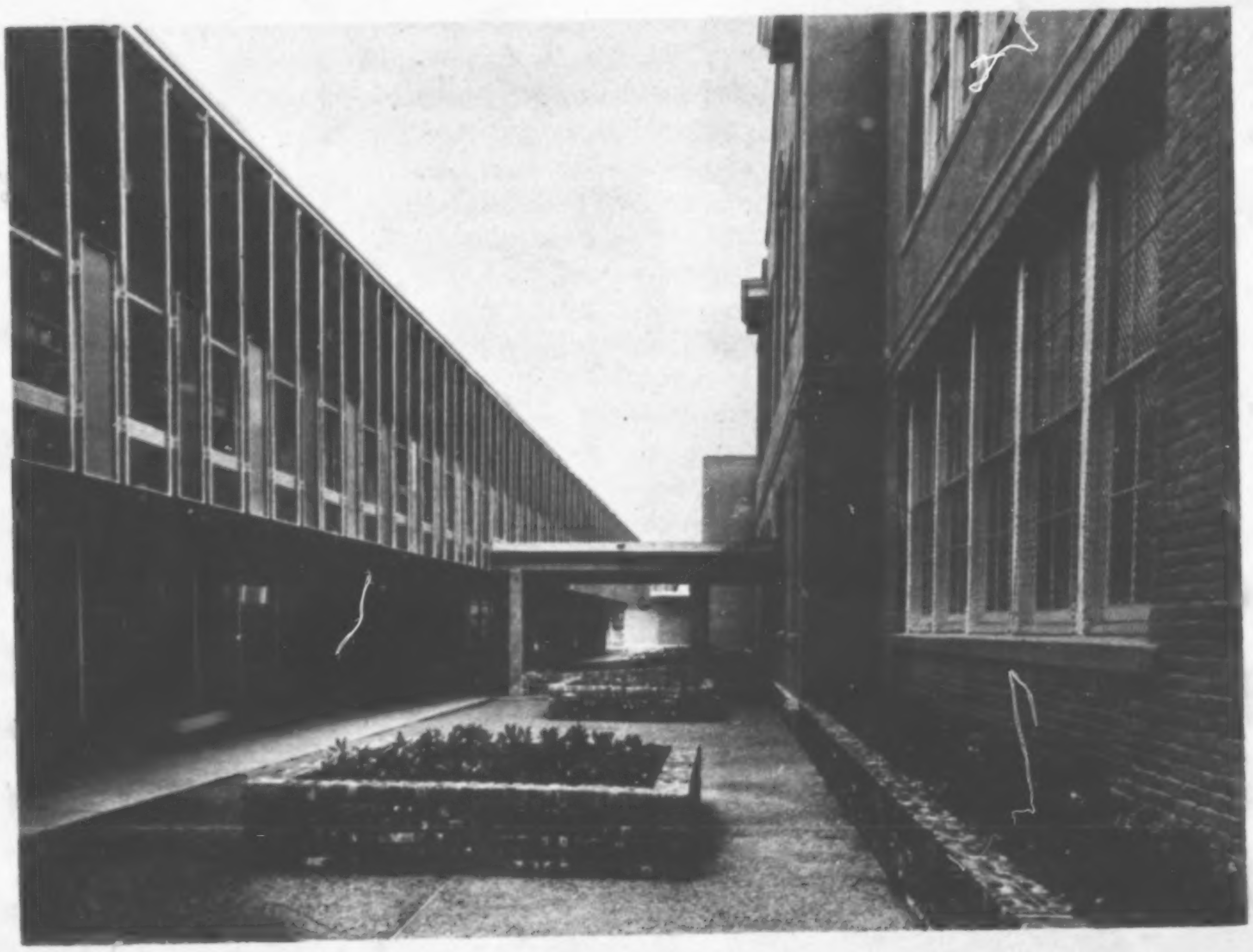
2. The program can be fitted to the financial ability of the school district by making schedule changes when necessary. The unit time span of the building program may be six years, seven years or any period; however, the establishment of a maximum unit of time not over five to seven years makes it possible to relate building costs to the district's ability to pay, and to the annual economic variation.

**3. With constant review, amendment and extension, the proposed plan will result in a continuing program of building modernization and replacement. All too frequently the years between building programs are sterile years during which time little thought or money is allocated for the modification of educational spaces or equipment. The education of the nation's children moves onward from year to year and so must the quality of the educational facilities keep pace.**

# THE PROBLEM



Site is a problem that must be considered. This is the longest and narrowest elementary school site in the Los Angeles City School District--165 feet wide and more than 1180 feet long.



This addition, left, was placed in front of old school in Houston and a landscaped court developed between the old and new. Eventually the old building will be replaced with a new structure consistent with the new addition.

# THE BALTIMORE APPROACH

By **Ambrose J. Chlada, Jr.**
Assistant Superintendent

Baltimore is an old city, founded in 1729 and incorporated in 1797, with its public school system starting in 1829. Fifty nine buildings, or 29% of our total school plants, were constructed prior to the turn of the century, and eighty five buildings, or approximately 41%, were constructed prior to World War I.

Happily, we can say that seventy new buildings, or approximately 34% of our total, have been constructed since 1950.

Our total plant evaluation on December 31, 1964, as established by the Bureau of Audits, is $240,781,000.

The Board of School Commissioners of the Baltimore Public Schools is appointed by the Mayor. However, the system is not physically independent and must rely on the Board of Estimates and the City Council for its total operating budget, which is $74,561,516 for the current year. In addition to the current operating budget, our capital funds for new construction, renovation of existing plants and site acquisition are subject to approval of the State Legislature, the Commissioners of Finance, the Planning Commission, the Board of Estimates, the City Council and finally, ratification by the electorate. Since the start of the post-war program in 1947, bonded funds amounting to $208,650,500 have been approved by the citizens and currently provide approximately $15,000,000 per annum.

Because of our constantly increasing school population, which is a paradox in light of the fact that our total population decreased by approximately 42,000 from the 1950 to 1960 Federal Census, a growth from 105,000 students in 1945 to 189,000 students in September 1964, we have been unable to accomplish much in the way of building renovation and have had to concentrate our efforts on providing new housing to accommodate our population increase. The problem of housing was complicated by the fact that by 1949 and 1950, when funds became available and construction was initiated, elementary part-timeness rose to over 10,000 students. This, coupled with the continuing population increase, resulted in a backlog which is currently being satisfied by construction, transporting students, erection of portables, etc.

We have had several satisfactory experiences with building renovations dating back to 1951, when the Baltimore Public School System was desegregated. One of our first rehabilitation and addition projects was the Booker T. Washington Junior High School #130, which had been constructed in 1895 and had had two prior additions, one in 1910 and one in 1928. This building was satisfactorily renovated, and sizable additions involving gymnasia, cafeteria, and auditorium were constructed in 1951 at a cost of $1,850,000. Just recently, in 1964, through the cooperation of the Baltimore Urban Renewal and Housing Agency, we obtained four acres of adjoining land to permit expansion of the outdoor athletic facilities.

Again, prior to the 1954 court ruling on desegregation, a large Girls' High School, which had dropped in population, was transferred to the Negro system and an old building in the downtown section was renovated to accommodate the remaining students in the Girls' High School. This building was originally constructed in 1896 as a Boys' High School and in the intervening years had gone through various types of service. In 1954, when it was renovated at a cost of $540,000, it was serving as a Boys' Vocational School.

One of our most successful renovations was the Francis Scott Key School - Elementary and Junior High #76, located only one quarter of a mile from historic Ft. McHenry. The building was originally constructed in 1921 and because of the fact that the community is a stable third and fourth generation neighborhood having extensive community ties and traditions, local support was very enthusiastic. In 1963 the entire building was renovated and a new cafeteria-kitchen wing was added at a cost of $855,700.

Two other renovation projects which have been completed are a Vocational Junior High School near the Johns Hopkins Medical Center and the John Eager Howard Elementary School in the northern section of a 1,000 acre Urban Renewal area.

The term "modernization" or "renovation" used in this report applies to complete building rejuvenation. Relighting, rewiring or reheating, in our opinion, is primarily a maintenance category, and the Baltimore Public Schools follow this type of maintenance in a continuing program in an attempt to provide some consistency within the system.

In my opinion, the practicality of building modernization is not limited to educational and/or structural obsolescence, and I would take this opportunity to point out two pitfalls which are locally important.

1. We have fifty four buildings, approximately 26% of our total number, on sites which are less than one acre. In any modernization program, it is necessary to determine the possibility and practicality of expanding site size to provide sufficient acreage for a total educational program. If it is impossible to expand the site size because of existing limitations within the community, it would be foolish to spend large sums of money for internal renovations, regardless of how functional or attractive the finished product.

2. Since most of the buildings requiring modernization and/or improvements are within the so-called inner-core or inner-city, a section which no longer has community ties and traditions because of population change and mobility, we are faced with a very real problem in human psychology. Having no affinity with former traditions, the present residents want new buildings as opposed to remodeled old buildings. Only in the case where a building has extensive significance, or where residents' interest has been continuous, does it become easy to convince the public that a satisfactory renovation can be done.

On the basis of our limited accomplishments in the area of building renovation, it would appear that we are opposed to such a program; however, this is not the case, since our projected capital program through 1971 includes approximately $25,000,000 for both replacement and rehabilitation.

The Board of School Commissioners has recently proposed increasing the annual capital funds from $15,000,000 to $20,000,000 and ultimately to $25,000,000, to accomplish the replacement and rehabilitation aspect while still proceeding with construction of new facilities, as required to accommodate the increasing student population and program diversification.

C. William (Bill) Brubaker, a partner with The Perkins & Will Partnership, architects, thinks with a sketchpad. Not only did he summarize his own Workshop remarks, but most of the proceedings. His 10-page sketchbook summary and comments begin on the facing page.

# " NEW LIFE FOR OLD SCHOOLS"

a workshop for representatives of
the Great Cities*

Research Council of the Great Cities
Program for School Improvement
spring conference - May 6 1965
at the Statler Hilton, New York City

* Baltimore Boston Buffalo Chicago Cleveland Detroit Houston
Los Angeles Milwaukee New York Philadelphia Pittsburgh St. Louis San Francisco
Washington

notes - Charles William Brubaker
The Perkins & Will Partnership

# GREAT CITIES
# OLD SCHOOLS
# REMODELING—

discussion leader HARRY GILLIES - introduction

STATLER HILTON, NYC
MAY 1, 1965

HARRY GILLIES (Lanza & Castagna)
LIAM DALTON (Sagan & Dalton)
ANTHONY NASSETTA (Weiskopf & Pickworth)
BERNARD REISSMAN (M. Sands)

COST ESTIMATING most difficult

REMODELING—
1) via gen. contractor
2) via school's own dept.

STRUCTURAL ANTHONY NASSETTA—

before 1900 ... often inadequate

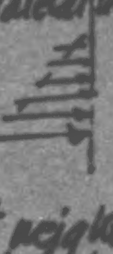
- 1900-1920 .. masonry bearing walls, tile & brick floor arches, cast iron cols, etc.
  extensive changes difficult, expensive; insurance problems

1920-1960 .. rolled steel beams, reinf. conc. frames, bar joists, fire resistive
reinf. conc. foundations
extensive changes easy in all-steel systems
" " difficult in all-conc. systems )
1935-1950

steel = easy to remodel with

steel is weldable ..
new beams etc. can be attached, usually
sample old steel to determine yield point
~~A33~~ A36 steels
connections most difficult
base plates & footings - can be the critical element

- check lateral bracing
  wind



concrete = difficult to remodel with

concrete frames
difficult to analyze, inspect, check, etc.
cores can be tested
footings easier to under-pin than piles
avoid

- light weight steel decks useful
- remove parapets to reduce dead loads.
-

Nassetta's final advice—
" in remodelling old buildings, stick with the old timers who know & understand old buildings! "

**MECH & ELECT**  LIAM DOLTON

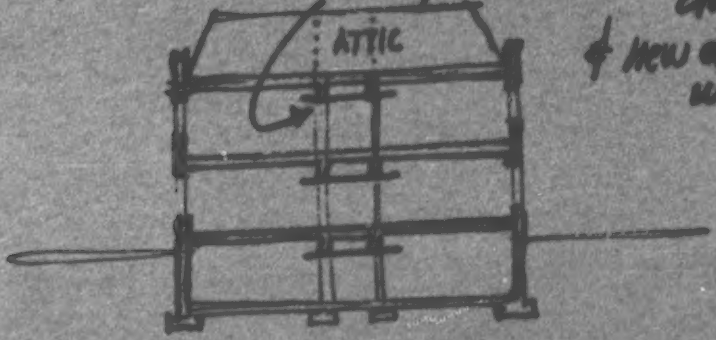
in remodeling
mech & elect costs
can be as much
as general costs.

(compare new bldgs.
where mech & elect. costs
are only 30% of total.)

Growing interest in
electric heating —
good if you expect to
re-wire anyhow.
Old buildings are well-insulated,
so if windows are replaced,
conditions are favorable for
electric heating.

Assume 30 yr. old school
steam system, cast-iron radiators
such a system will be in need of rehabilitation
probably replace the boilers — piping too!
don't necessarily "stay with steam"
new technology suggests hot water system.
on-off valves can be replaced with temp control system.
insulation probably gone from pipes.

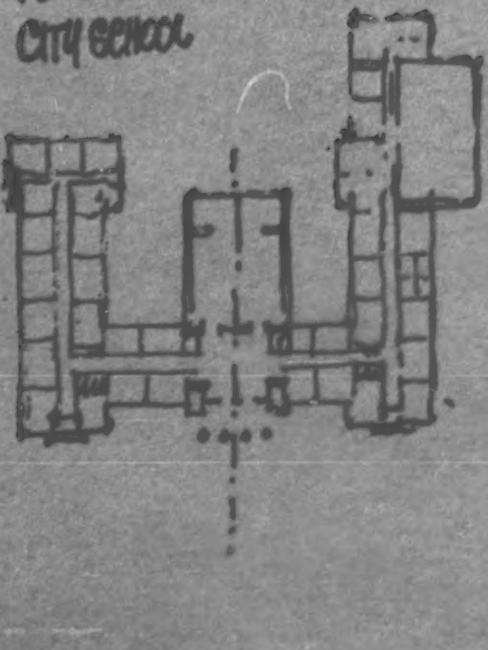
"Ventilation" probably only toilet exhaust
original classroom ventilation systems probably abandoned 20 years ago!
new ductwork can be cheaper than trying to use old ducts.
new, lower, corridor ceilings useful for new ducts, & new electrical work too.



Plumbing
after 30 years, galvanized steel piping probably must be replaced.
(cut sections out to test.)
fixtures replaced – sometimes using existing stacks

Electrical
Service may be updated or replaced (if loads substantially increased.
Panelboards in corridors often inadequate, even dangerous.
Classrooms may have only 5 to 10 ft. candles from old incandescent fixtures.
Changing to more efficient fluorescent fixtures increases 2½X.
Coordinate new lighting with ceilings.

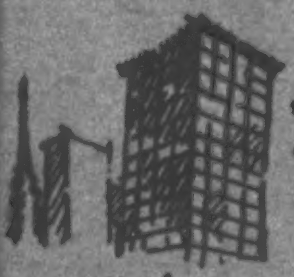
1920
CITY SCHOOL



## The Mechanical Contractor

BERNARD REISSMAN

Vertical building
easier to work with
than horizontal bldg.



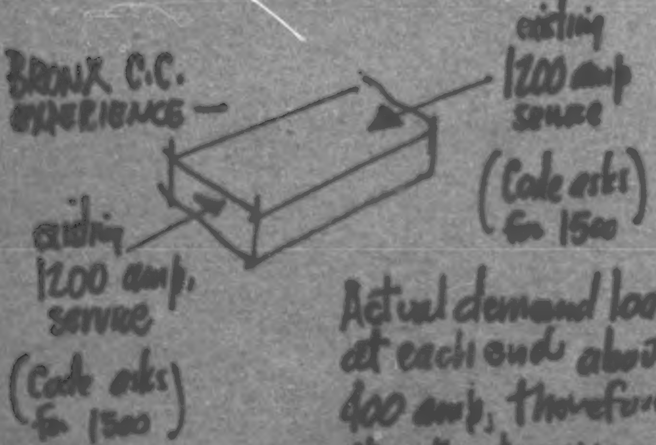
"easier to
re-pipe, etc."

Question: can
existing 1910-1930
office buildings be
converted for
schools?

A Boston
Experience —
$1,500,000 remodeling
(replacement cost would have
been $6,000,000.)

Next: old English H.S., Boston,
handsome exterior, good location,
a mess inside ...

BRONX C.C.
EXPERIENCE —



Actual demand load
at each end about
400 amp; therefore
city authorities approved
continued use of existing service.

Engineering plans & specs for remodeling
not as good or thorough as for new work.

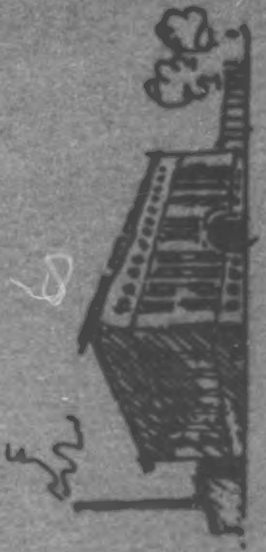
Estimating, checking, supervision
costs are high

Boiler room work must be done during summer months.
Contracts should be made previous November
to allow purchasing, etc. — for summer work.

Storage of materials, pilferage, etc.
are problems working in old bldgs.

Prefabrication of piping difficult
since actual conditions can't be anticipated.

Needs: better plans
all subs prequalified
separate contracts



General Conclusion —
remodeling work is
difficult to estimate
difficult to execute
... not sought by many
contractors.

860 buildings in NYC

By using British System
"Quantity Surveyor" —
actual quantities are listed in the
contract documents so
all contractors bid on exactly
the same quantities of materials.
(After job is finished, quantities
are reviewed, & adjusted.)

# GREAT CITIES
# OLD SCHOOLS

---

## MILWAUKEE SCHOOLS

Howard M Alex
Asst. Supt. of Schools
Milwaukee

28
elementary schools
modernized by 1965…
@ $1.5 million/year.
= 4 buildings/year.

Milwaukee's
3-pronged attack –

1) modernizing
50 elem. schools each
40 to 80 years old

2) "Major Projects" program
to expand & improve
secondary schools.

3) lighting, acoustics,
alarms, stair enclosures,
furniture, landscaping, etc.
improvements

new lighting
heating
ceilings, flooring?
tackboard chalkboard
furniture, paint

such schools are
remodelled at about $4 or $5 per sq.ft.
average size 60,000 sq.ft. @ $4.50 = $270,000
(20 classrooms)

note that some
Milwaukee schools are
not fireproof.

private architects responsible for Milwaukee work
(Gene Hutt points out that NYC commissions private engineers
for remodelling that is primarily mech & elect. work.)

Milwaukee – 2% of budget for maintenance
NYC – 1½" " "

## SAN FRANCISCO SCHOOLS

1906 earthquake & fire – 29 schools destroyed – temporaries built
by 1908 – 8 new schools completed … then, in following years, more new schools.
The old, obsolescent, schools have not been replaced.
Now, a new plan for 1) REPLACEMENT when, especially, old bldg is educationally obsolete.
2) MODERNIZATION = extensive changes
3) REHABILITATION – minor changes, as paint, lighting, etc.

emphasis on
elementary schools.

(Gene Hutt – NYC
schools built for 50 years
– remodeled for additional 25 years
– if remodeling approaches 50% of new cost,
demolition therefore is probable.

# BALTIMORE SCHOOLS

A.J. Chlade Jr.
Asst. Supt. of Schools
Baltimore

in Baltimore
of 210 schools ...
30%, or 59 constructed before 1900
30% of schools built since World War II
$240,000,000 value of present schools
75,000,000 operating budget / year
+ 15,000,000 capital improvements / year (hope to increase it)

many buildings defined
in 1921 and 1951 surveys
as "obsolete"
are still in use.

school population - 190,000 students now,
+ moved more adult & summer students
= an increase in school population
while total city population decreased.
(Catholic population tended to move out.
More students kept in school.

little or no new
school construction
during 1930 & 1940 decades.

A Baltimore problem —
using non-school older buildings
for school use!
(for example, when neighborhood changes
from Jewish to Negro, can the abandoned
synagogue be used for school purposes?)

Baltimore Schools are not
financially independent —
all money comes via city's
& with state legislature
approval!

Population mobility =
few traditional neighborhood ties.
Ask = what is the future
of the neighborhood?
Will urban renewal activity
change need
drastically?

Re:
Site Sizes —
some schools are
on one acre
or less!

Site Size is a major
consideration!

Note
Code problem:
when you modernize,
codes suddenly are
enforced!
" a motive to
not modernize!

Effect of new
expressway construction?
— traditional neighborhoods
divided.

Unlike Milwaukee,
very little maintenance work.

"OLD SCHOOLS —
PART OF THE CITY'S ASSETS"

— CHAS. WM. BRUBAKER
The Perkins & Will Partnership
Chicago . New York . Washington

A series of 80 slides
illustrating these major points:

THE URBAN ENVIRONMENT
the city — still glamorous
city center — new interest now
active areas, elegant areas
dead areas, sadly neglected areas
RESIDENTIAL AREAS
from new luxury high rise
to rotting slums
with the great gray area between.
note new interest in old houses
*in* the city!

Note 1960 book by AASA
School Buildings Commission —
"Planning America's School Buildings"
Chapter 13 asks —
"should an existing structure
be abandoned or remodeled?"

FACE FACTS:
1) SITE — is it adequate in size (old standards were low.)
how about the *future* needs of the neighborhood?
2) BUILDING — is it safe (many old structures are not — especially by today's fire-safety standards.)
— is it agreeable?
— what about mechanical-electrical needs?
3) THE EDUCATIONAL PROGRAM —
— *can* the building satisfy new needs?
— *how many* pupils can it serve? (honestly now)
4) COST —
— *is* remodeling a good investment (or are you pouring money down a rat hole?)

RURAL ANCESTORS
one room, two room, four room schools
to the 4000 student high schools today
CITY SCHOOLS
like country cousins, some have outgrown their usefulness
ORDINARY CITY SCHOOLS
the typical (and faceless) practical (1880 1900 1920 1940) city school
sometimes made agreeable by good trees
or by special interested care & development thru the years.
(some have character, via eclecticism)
too many have the "institutional feeling"
which is "large numbers plus sameness" (-McQuade)

GOOD OLD CITY SCHOOLS
someone *cared* ... buildings with true character, good quality
as Carl Schurz H.S., Chicago, built in 1909
which should be going strong in 2000!
Evanston Twp H.S. — since 1920s — an outstanding school.

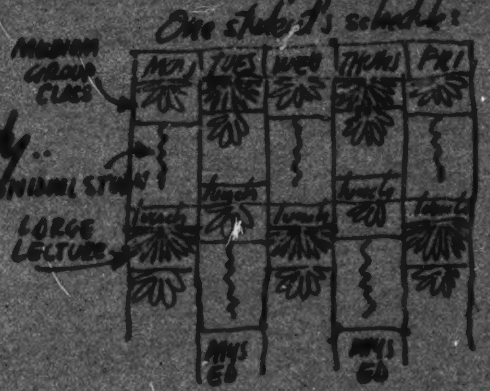
CWB, continued… "OLD SCHOOLS – PART OF THE CITY'S ASSETS"

THE PROBLEM—

- Can the old city school provide a satisfactory place for learning today?

… if not then tear it down.. (its cost was written off years ago!)

- new educational programs, the new media, new pupil groupings, schedules, teaching techniques create a need for more variety in space, more flexibility..

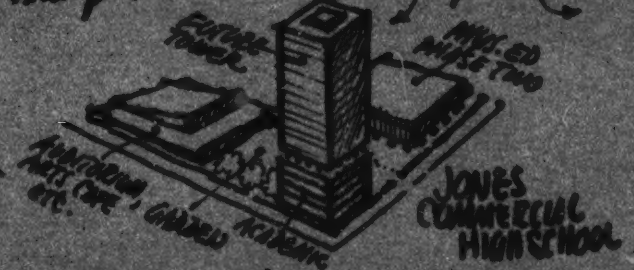

One student's schedule:
MEDIUM GROUP CLASS
INDIVIDUAL STUDY
LARGE LECTURE
MON
TUES
WED
THURS
FRI
lunch
lunch
lunch
lunch
lunch
PHYS ED
PHYS ED

- the old school is sometimes limited in that it provides "standard classrooms" primarily.
  - ingenuity needed to create space for… … large group instruction, individual study, instruction materials, faculty, etc.

MEANWHILE, IN THE SUBURBS…
new schools enjoy large sites, facilities designed specifically for new programs..
– especially the last 10 years.

NEW URBAN SCHOOLS
suddenly are interesting, probably more imaginative!

(examples: New York & Chicago schools


OFFICE TOWER
PHYS. ED. AMUSE TWO
AUDITORIUM, ARTS CAFE, ETC.
GARDEN
ACADEMIC

JONES COMMERCIAL HIGH SCHOOL

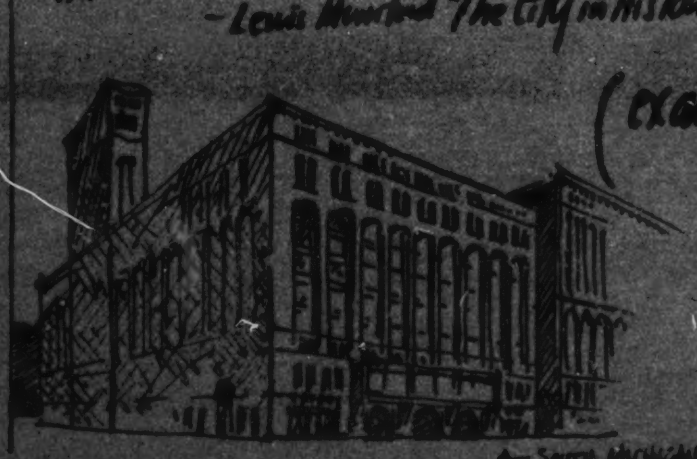
BYRD SCHOOL – CHICAGO

OLD SCHOOLS IN THE CITY have this strong competition..

- The superb old building can & should be remodeled!

(example: Boylston Hall, Harvard
built in 1857
completely remodeled in 1959.. (by TAC)
saving only the thick granite walls, slate roof
at cost of $16.50 per sq.ft. (air-conditioned)
expensive, yes, but the result is better than Harvard's new buildings!

"The City, as Emerson well observed, lives by remembering.. Through its durable buildings … the city unites times past, times present, and times to come."
– Lewis Mumford "The City in History"



← SOUTH MICHIGAN AVENUE →

(example: Roosevelt University, downtown Chicago
built in 1889 as "The Auditorium"
– an historically important structure…
gradually being remodeled (where appropriate)
and restored (where appropriate)

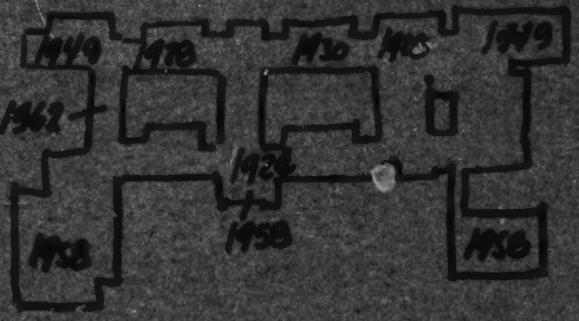
## CWB, continued – "OLD SCHOOLS – PART OF THE CITY'S ASSETS"

**EVANSTON TOWNSHIP HIGH SCHOOL** – AN OLD SCHOOL BUILDING .... CONTINUOUSLY RENEWED! / AN EXCELLENT EDUCATIONAL PROGRAM!

- Dr. Lloyd Michael, Supt.
- Engelhardt, Engelhardt & Leggett, educational consultants
- The Perkins & Will Partnership, architects

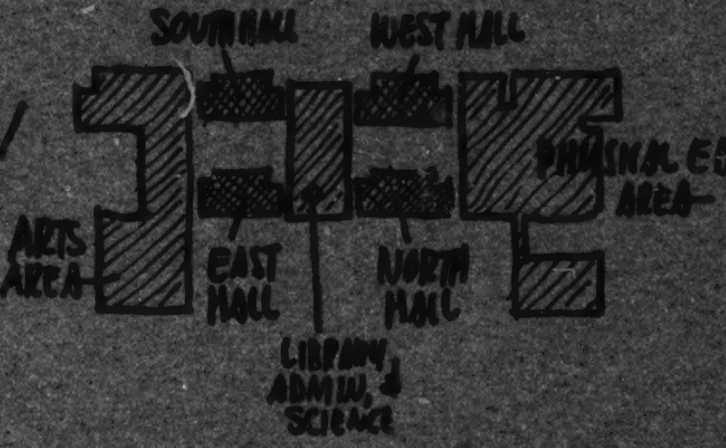
**STAGE CONSTRUCTION SINCE 1924**

1924 .. 1928 .. 1930 .. 1949 ..
1958 .. 1962 .. AND
TOMORROW ..


1949
1928
1930
1949
1949
1962
1924
1958
1958
1958

**HOUSE PLAN – FOR THE LARGE SCHOOL –**

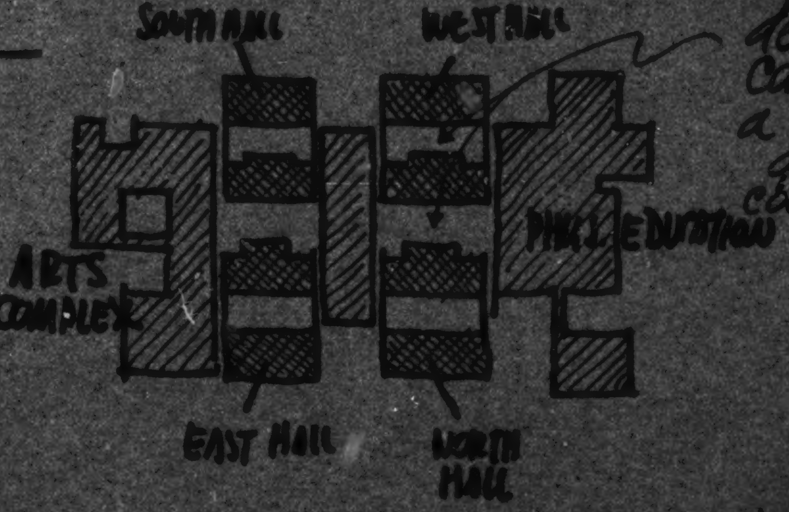
the existing high school
is organized as
four "little schools" ...
= "4" halls →


SOUTH HALL
WEST HALL
PHYSICAL EDUCATION AREA
ARTS AREA
EAST HALL
NORTH HALL
LIBRARY, ADMIN, & SCIENCE

**FUTURE GROWTH PLAN FOR EVANSTON TWP. H.S. –**

each "hall"
3 floors ...
each hall
for 1500
students →

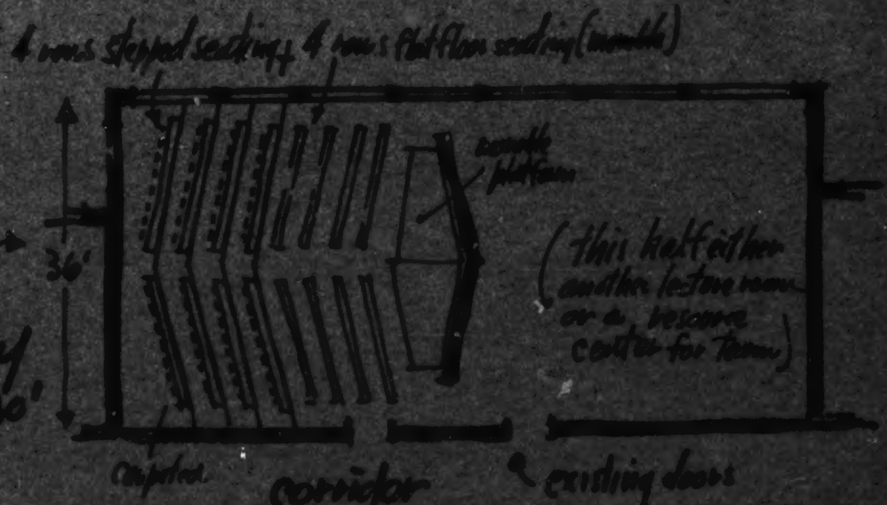
(total ETHS
enrollment will be
6000 students!)


SOUTH HALL
WEST HALL
ARTS COMPLEX
PHYS. EDUCATION
EAST HALL
NORTH HALL

design concept – a series of garden courtyards.

**TEAM TEACHING – at ETHS –**

created need for
large lecture rooms seating 120
.. which were created by
remodeling old 36' x 80'
study halls!

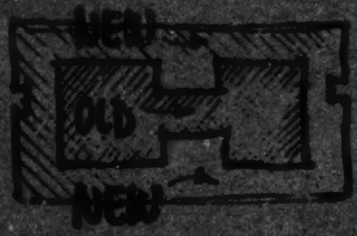

4 rows stepped seating + 4 rows flat floor seating (movable)
movable platform
36'
carpeted
corridor
existing doors

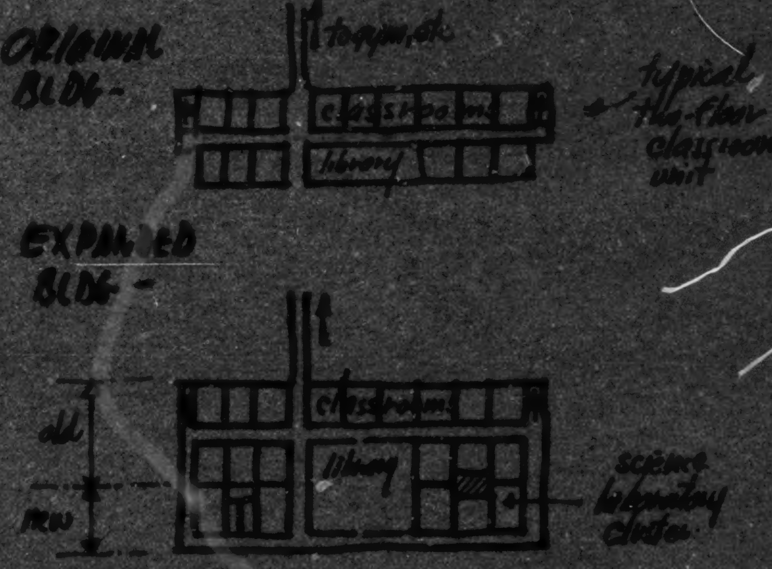
(this half either another lecture room or a resource center for Team)

CUB continued - "OLD SCHOOLS - PART OF THE CITY'S ASSETS"

## SURROUNDING - THE OLD SCHOOL with new construction

( example - Evergreen Park Ill. Chicago area )




ORIGINAL BLDG -
to gym, etc
classrooms
library
typical two-floor classroom unit
EXPANDED BLDG -
old
new
classrooms
library
science laboratory cluster

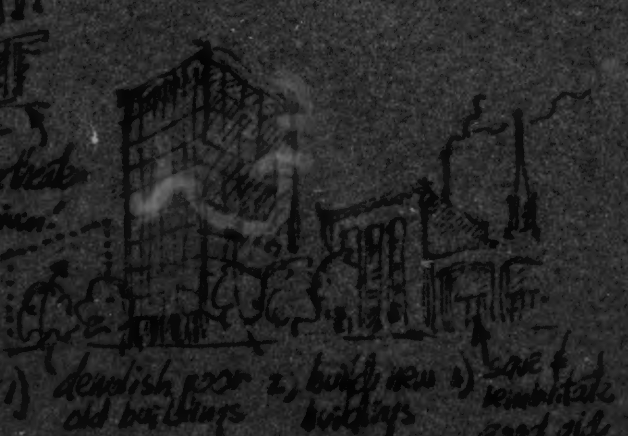
## COMMUNITY + COLLEGE -

thousands of secondary business districts in America's Great Cities now lack full active life.

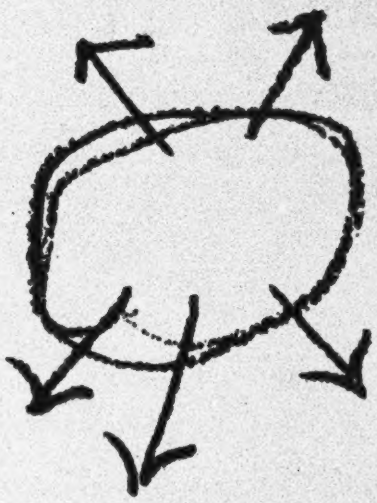
proposal: locate the new community colleges in these business districts using certain good old buildings + excellent quality new construction

... to bring new life to these community centers ..
- to stimulate urban renewal with attractive construction ..
- to serve the total community day & night
- to generate community interest and "esprit de corps" among citizens and especially youth.
- to encourage both full-time and part-time learning learning and Teaching, too!

To begin the program - convert the empty main theater to the college auditorium!


1) demolish poor old buildings
2) build new buildings
3) save & rehabilitate good old buildings!

mix the good old
and the excellent new =
= economically attractive
= cultural & historical continuity
= a whole life richness
that cannot be achieved
by the bulldozer approach
to urban renewal.



## REPORTS FROM OTHER CITIES

Following the Spring Conference Workshop, the other member cities submitted reports on the status of their modernization programs and contemplated future actions.

BOSTON
BUFFALO
CHICAGO
CLEVELAND
DETROIT
HOUSTON
LOS ANGELES
NEW YORK
PHILADELPHIA
PITTSBURGH
ST. LOUIS
WASHINGTON, D.C.

By Anthony L. Galeota
Chief Structural Engineer

The Boston School Department has been operating on an annual Alterations and Repairs budget based on a formula of $1.70 per one thousand dollars of valuation. This formula was established sixteen years ago (1949) by the legislature.

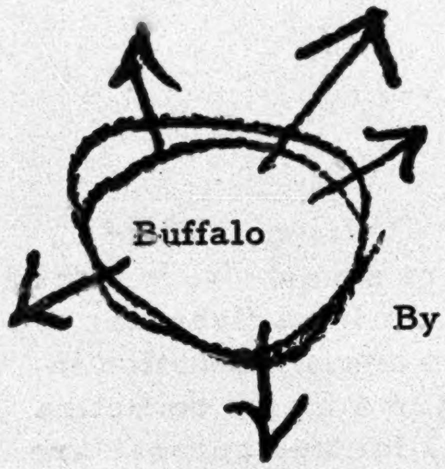
This figure nets $2.4 million, to take care of all our school buildings. According to reliable statistics of the American Architectural Record and other engineering and government papers, it has been established that the cost of construction has risen over 100% from 1949 to the present time. It therefore follows that there should be available approximately $5 million per year for alterations and repairs to school buildings.

The school plant has suffered because of inadequate funds. Extraordinary repairs have had to be curtailed, and many major educational projects have been postponed year after year, because of lack of funds. The only relief has been the Extraordinary Repair Loan authorized in 1961 by the legislature under Chapter 514. This was a good start, but represented only a small portion of what was necessary.

Listed below are modernization projects and funds which are needed to improve our schools:

| | | From present $2 million loan order | Amount needed to complete modernization |
|---|---|---|---|
| 1. | Modernization of heating plants | $ 500,000 | $1,500,000 |
| 2. | Renovation and remodeling of Science, Chemistry, Physics, Biology laboratories, also new Language laboratories | 400,000 | 200,000 |
| 3. | Installing new or enlarging present school libraries | 100,000 | 200,000 |

| | | | |
|---|---|---|---|
| 4. | Installing new offices for guidance counselors, reading consultants, and school adjustment counselors | $ 50,000 | $ 50,000 |
| 5. | Replacing obsolete plumbing | 300,000 | 1,500,000 |
| 6. | Modernization of electrical system - clocks, lighting & intercommunicating, also vandal alarms | 150,000 | 1,000,000 |
| 7. | Major roofing work | 100,000 | 300,000 |
| 8. | New bituminous play surface including enlarging of physical education areas | 150,000 | 1,000,000 |
| 9. | Waterproofing exterior walls | 50,000 | 300,000 |
| 10. | Modernization of Business Education facilities | 20,000 | 40,000 |
| 11. | Modernization of Home Economics laboratories | 30,000 | 20,000 |
| 12. | Modernization of, and installing new, facilities for Distributive Education | 20,000 | 20,000 |
| 13. | Modernization of cafeterias, including equipment | 50,000 | 800,000 |
| 14. | Modernization of equipment for Vocational Education and Industrial Arts | 50,000 | 1,200,000 |
| 15. | Modernization and renovations made necessary by introduction of new courses, for dental assistants, beauty culture, and foods | 30,000 | 0 |
| | | $2,000,000 | $8,130,000 |



By **Bernard J. Rooney**
Associate Superintendent

During the period of 1952-1957, the funds received through the Capital Expenditures Program, and allotted for rehabilitation and modernization of existing school buildings, made it possible for the Board of Education to save many schools from complete obsolescence -- in terms of educational facilities and plant operation. During that period more than $3 million was spent on the rehabilitation and modernization of Buffalo schools and $1 million was approved and allotted to the program in 1957-1958.

To replace the ten schools listed for partial or complete rehabilitation and modernization in 1957-1958 would have cost the citizens of Buffalo close to $20 million. It is our belief that the expenditure of one-twentieth of that sum for effective rehabilitation was good business. The total received and expended from 1950 to 1965 amounts to $10,365,645.55.

## OBJECTIVES OF THE MODERNIZATION PROGRAM

The Buffalo modernization program evolves from a clearly defined time schedule, based on the school painting schedule wherein school building interiors are redecorated every ten years and exterior painting is done every five years. Using this as a schedule basis, we attempt to meet these objectives:

1. To prevent the physical deterioration of existing school buildings.

2. To maintain in every school building high standards of safety and cleanliness, and to provide a pleasant atmostphere for teaching and learning.

3. To provide and maintain the physical facilities necessary for the effective conduct of the desired educational program.

## PROGRAM ORGANIZATION AND OPERATION

In the Master Schedule prepared by the Division of Plant Services forty-two elementary and secondary schools were placed on the rehabilitation and modernization list during a five-year period beginning in 1957. Unfortunately, an annual reduction in Capital Expenditure Programs has resulted in a major reduction in the reconstruction program, and no funds for this purpose are in the 1965-1966 program.

The program as originally conceived requires a minimum of $1 million every year. This was based on ten projects listed in each year and work in larger schools to extend over a two-year period.

School building rehabilitation poses varied and complex structural and mechanical problems, which are solved only through a combination of careful planning and craftsmanship. Before plans and estimates are prepared and rehabilitation work can be started, each building is visited and studied by an inspection team. The team is composed of the Principal and Custodian-Engineer in the individual school, a representative of the Instructional Services Division, and key men from the Plant Services Division.

The inspection teams prepare comprehensive data sheets, which clearly define the instructional, mechanical, and structural needs and requirements for each school. Cost estimates and rehabilitation plans are prepared from data in the inspection team's reports, and the annual Plant Survey Report submitted by school principals.

Although cost estimates for school rehabilitation and the Board's request for Capital Expenditures Funds must be submitted in December, the capital funds for rehabilitation are not available until August and October of the following year. The two-to-four month gap without new rehabilitation funds mandates exceptional budget supervision and control throughout the year.

Structural and mechanical plans for individual schools to be rehabilitated cannot wait for approval and availability of capital funds. Great emphasis has been placed on adequate preliminary planning. The plans prepared by a structural engineer and a mechanical engineer provide all of the basic data necessary in rehabilitation work. The plans are submitted to the school principal for study and suggestions before final approval by the Plant Division Head. The approved plans serve as guides for general construction, heating and ventilating, plumbing, electrical, and site development work. Key men for each major area of work, together with skilled building trades crews, form effective working teams. The experience and skills of individuals on each team make possible the solution of structural and mechanical problems which cannot be foreseen and provided for in the working plans. The area supervisors are responsible for laying out, scheduling, and completing all work within their areas. The entire staff works as a single team to accomplish the desired objectives. All deviations from the original plans are approved and noted. Revisions affecting the instructional program must be approved by the Division of Instructional Services or a representative of that Division. We believe the teamwork practiced by the Plant Services Staff permits a flexibility in planning and construction that is impossible to attain in a program using private building contractors.

In addition to the teams working in the school buildings, there are supporting teams in the central office and in the various shops located in the Board of Education Warehouse,

The operation and production of the cabinet shops staff, under the supervision of a master craftsman, is one of the Division's greatest assets. The volume and quality of work produced by the men in the furniture repair and refinishing department, in the metal shop, and the shade shop must be seen to be appreciated. The men who maintain and operate the delivery and transportation services, those who service and repair office equipment and musical instruments, and the men who are responsible for receiving and distributing materials and supplies used in building rehabilitation for building operation and maintenance and for the instructional services, are making their individual and group contribution to the total program.

## IMPROVEMENTS INCLUDED IN REHABILITATION PROGRAM

In every rehabilitated school many major improvements are

**made in order to bring structural, mechanical and instructional facilities up-to-date. Some of the improvements are:**

1. **Removal of wood wainscoating in corridors and classrooms where practical.**

2. **Chalkboards are refinished and lowered to proper heights for young children. Excessive chalkboards replaced with cork display panels. The ten inch (10") cork panel over chalkboards replaced with an eighteen inch (18") panel in all primary grades.**

3. **Teachers' wardrobes are provided in classrooms where necessary. Modular units are installed in classrooms to provide storage, work and display areas.**

4. **Specific areas receive acoustical treatment - corridors, kindergarten rooms, music rooms, gymnasiums, libraries, cafeterias and offices.**

5. **Wood floors are refinished or recovered with linoleum or floor tile.**

6. **When necessary, buildings are rewired and all electrical controls and elements are rehabilitated or replaced with new equipment. Fluorescent lighting fixtures to provide adequate and desired lighting in classrooms and shops replace existing lighting fixtures. Clock systems, communication systems, fire alarm and fire detector systems are repaired, replaced or added as necessary.**

7. **Faculty rooms, clinics and offices are remodeled and improved as required.**

8. **New and more adequate storage facilities are provided for instructional and custodial services.**

9. **Entries and stairways are checked, remodeled and resurfaced as required.**

10. Smoke screens at stairheads are added where necessary.

11. Plumbing throughout the school is modernized to meet existing sanitation codes.

12. The heating plant is modernized - boilers are replaced and if practical, the heating system is converted from coal to oil or gas. New gas fired hot water heaters replace old coal fired heaters. Cast-iron radiators are removed and replaced with fin-tube radiation.

13. After structural repairs and changes are completed - including all necessary plastering - the building interior is redecorated and the exterior trim or entire building is painted.

14. New walks and drives are included as necessary parts of the rehabilitation program. Playgrounds are surfaced with asphalt, landscaped areas are renovated as required.

15. Antiquated classroom furniture is replaced with new furniture in at least one school each year. Where practical, furniture throughout every rehabilitated school is reconditioned or replaced.

16. Stage and window draperies are replaced with new colorful and flameproof materials.

17. Torn, faded and soiled window shades are replaced with new shades.

It is beyond the scope of this report to adequately describe the total effect of school building rehabilitation and modernization. No written report can describe the reactions of children, teachers and parents to bright clean colors in contrast to dull, drab, unpleasant school house greens and browns, to effective lighting, to new comfortable desks and chairs, and to the many pleasant changes in the over-all appearance of a building.

By E. A. Lederer
Associate Superintendent

The school modernization program of the Chicago Public Schools has been phased in relation to available budgeted funds which have been limited by the needs for utilization of capital funds required for new construction. During the past twelve years, attention has been given to the most urgently needed projects in the form of providing new electrical service and improved lighting, boiler conversions, toilet modernization, and various corrections and updating of facilities required to meet building code standards. A significant illustration of the latter item is the broad program instituted in 1959 involving the installation of automatic sprinkler systems in 159 schools of ordinary construction at a total cost of $4,033,577.00. In addition, numerous projects have been undertaken to improve the teaching facilities through rearrangement of partitions, providing for current needs for counseling areas, instructional material centers, health services, etc.

In order to more adequately determine the physical needs of buildings, a comprehensive annual inspection program was inaugurated in 1960. This entails a roof-to-basement inspection, participated in by the district superintendent, district supervising engineer, principal, and engineer-custodian. Frequently, this group is joined by representatives of the Architect's office and one or more trades foremen. The major modernization needs of particular buildings are reflected in budget requests which are assigned a school level priority number. These requests then are reviewed at the district level and given a district priority value. Finally, a city-wide priority is placed on each request by appropriate supervising personnel. Items of top priority are appropriated for in the annual budget, based on funds available for these purposes.

A major aspect of the modernization program is related to the extensive high school and college laboratory rehabilitations which have been performed during recent years, funds for which have been supplied partially through the N. D. E. A. program. In all, 35 such projects have been completed, and currently 7 are in progress.

Another type of modernization activity is related to the total conversion of buildings of various types into use as school structures. An example of such a conversion is the current modernization of a grocery-chain warehouse and processing plant donated to the Board of Education, now being transformed into a vocational high school at an estimated cost of $6.50 per square foot. An office building was remodeled into a modern junior college building, and three obsolete telephone-exchange buildings, the latter also acquired by the Board of Education at no cost, have been converted into educational and vocational guidance centers.

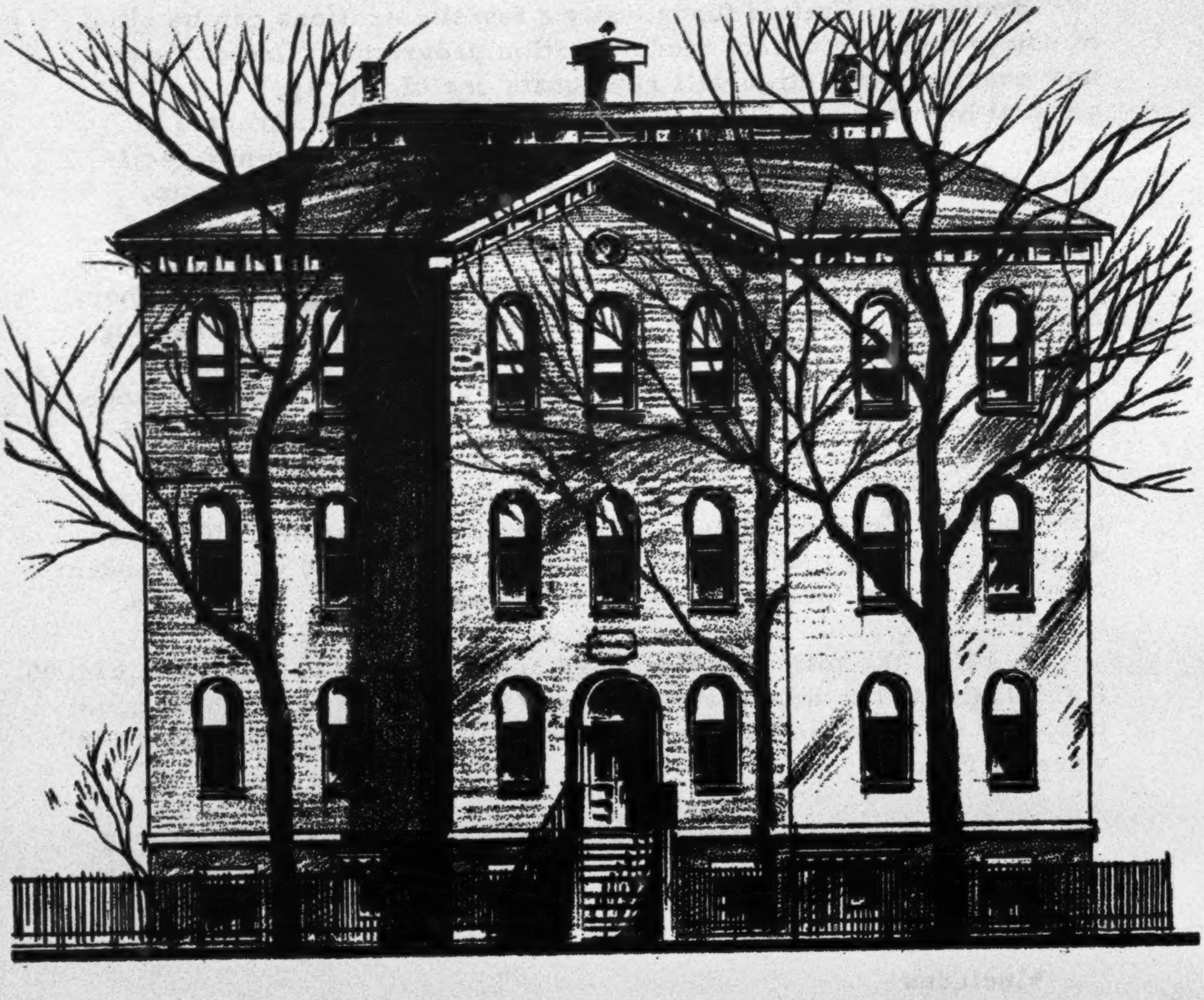
Because of limited funds, only a few illustrations can be cited of comprehensive school modernization programs. One of these now nearing completion will rejuvenate one of Chicago's oldest general high schools. The original building was constructed in 1901. In 1961, at a cost of $668,173.00, the following new facilities were constructed as an addition: auditorium, band room, music room, choral room, lunchroom, faculty dining area, and kitchen. In progress now is a major rehabilitation of existing facilities, costing $286,291.00, involving alterations in wood shop, receiving room, carpenter shop, industrial arts shop, counseling room, adjustment room, assistant principal's office, teachers' lounge and toilet, matron's room, conference room, vault, speech correction room, 4 general classrooms, attendance office, study hall, food laboratory room, sewing room, office practice room, typing room, library, and Biology, Chemistry and Physics laboratories, and General Science rooms and lecture rooms. Needless to say, extensive modernization projects of this kind would be undertaken in greater numbers if it were financially possible to do so.

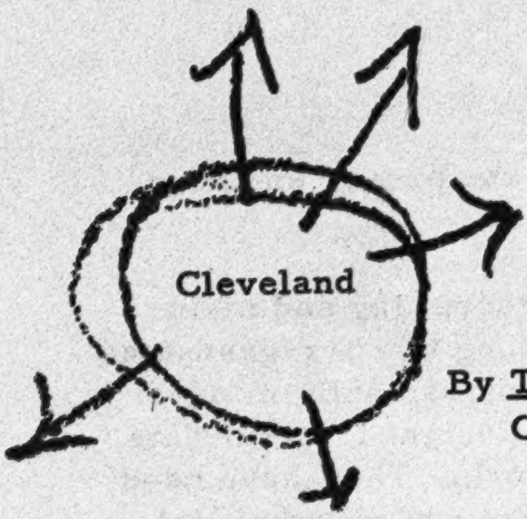
In 1965, the total Building Fund appropriation was $35,819,614.00. It is significant to note that within this fund the amounts which could properly be classified under the heading of "Building Modernization" were as follows:

| | |
|---|---|
| Architectural-Educational Space Alterations | *$2,281,340.00 |
| Electrical | 930,000.00 |
| Heating and Ventilating | 575,815.00 |
| Plumbing | 441,325.00 |

*Includes --
$1,075,000.00 for Science Laboratory Rehabilitation
$ 600,000.00 for partial conversion of warehouse building to use as a vocational high school.

**It is evident that, until greater resources are available for capital expenditures and/or the need for providing for new construction to meet pupil enrollment demands diminishes, we must necessarily conduct a restricted program for systematically modernizing school facilities in the Chicago Public Schools.**





By T. W. Hartman
Chief, Housing, Equipment & Supplies

We feel that our modernization program consists largely of four parts: (a) Replacement of entire old buildings. (b) Remodeling and re-equipping of certain facilities within buildings of moderate age and paid for by a portion of bond money earmarked for this purpose. (c) Modernization of some facilities and additions financed with Federal matching funds. (d) Building improvements.

## A. Replacement of Entire Old Buildings

To date we have been able to replace only one elementary school which was nearly 100 years old. The School Board recently authorized the replacement of one of our oldest junior high schools which was built in 1894.

There are forty schools which will be seventy-five years of age or older in 1970. As time passes, this list of structures will increase. The School Housing Study Committee, after studying reports of what other large cities are doing in regard to older buildings, studying local conditions and visiting some of our older buildings, stated: "Another aspect of the local housing problem is that of antiquated, unsafe and outmoded structures erected between the Civil War and the Spanish-American War. While some of this construction has been renovated and modernized to meet today's unprecedented demands, most of the basic designs and layouts are inadequate by modern educational standards; revamping such buildings is generally more costly in the long run than demolition and replacement. Most of these older buildings, for example, have wooden structural members and wooden floors. Their open wooden stairways are fire hazards which would be in violation of existing building codes, had the codes been made retroactive. They are all two or three story buildings whose only washroom facilities are located in the basements.

"Obsolete school housing is a serious handicap to education in Cleveland. Scarred desks, squeaky wooden floors, dimlylighted rooms and vaulted ceilings are not the proper environment for learning.

"Poor housing also has an impact on recruiting and maintaining a competent teaching staff. The young teacher-graduates of modern colleges and universities are professionally minded. They expect and seek fully equipped, well-designed, up-to-date classrooms in which to pursue their life work. They have been trained to deal with classes of moderate size where individual student needs and differences may be properly considered. Their talents are ill-used when they must handle classes of forty to forty-five in outmoded buildings with inadequate facilities. As a result, many have left such conditions to move into suburban schools."

This same Committee, in its recommended ten-year school housing program, included an item for "Safety and Renewal Program -- Replacement of unsafe or obsolete school buildings at $37,850,000."

Commenting on this item, it stated, "About 33% of the total will be used to effect the orderly elimination of thirty-seven unsafe and hopelessly inadequate structures and replace them with modern, well-designed buildings. These high operating cost buildings are a serious handicap to educational progress and must be eliminated."

The Committee further stated, "The Safety and Renewal Program is of such magnitude ($30 million) that the Committee recommends two things: first, that the major part of it be deferred until urgently needed new schools are provided; second, that the period of replacement be extended through 1973. These recommendations in no way discount the validity and necessity of this phase of the plan; replacement of the worst of these dangerous and dilapidated structures must still begin as soon as possible and be accelerated as quickly as funds are made available."

It was suggested that an engineering and use survey should precede the recommendation to replace, modernize or abandon these older buildings.

Where additions are needed at our older buildings, these additions are planned so that when money is available, the old building can be torn down and a new building erected and use the facilities of the new addition.

## B. Remodeling and Re-equipping

All elementary, secondary and special schools will benefit from this program. The following is a list of the type of equipment and rooms which will be replaced, modernized or provided:

Replacement of old Cleveland box desks or obsolete movable tablet arm chairs in elementary schools with the new style table-desk with plastic top and chair which has been approved by a committee, as the type best suited to our needs. This type of seating has proven to be quite satisfactory and durable.

Replacement of old obsolete seating in secondary schools. Left and right desk-chair units, of a style which has worked out very well in our newer secondary schools and as replacement furniture, will be purchased.

Replacement of old teacher desks, chairs, furnishings, and a two-drawer teacher file, where needed.

Replacement of obsolete maps and globes and supplementing these, where needed.

Replacement, modernization or additional secondary school Science, Biology, Physics and Chemistry rooms, as needed.

Replacement of worn-out equipment, conversion and additional Industrial Arts Shops, as needed, to make them better fitted to new concepts of education in preparation for jobs.

Replacement of old and obsolete equipment and modernization of Home Economics Sewing and Foods Laboratories.

Modernization of obsolete secondary Art rooms.

Replacement of worn-out typewriters, adding machines, calculators and other business education equipment. Some modernization, with new types of equipment such as electric typewriters, etc., is planned. Additional rooms will have to be converted to this use in line with the Comprehensive High School.

Provide for departmentalized science in elementary schools with sinks, suitable furniture, equipment and supplies.

Provide for elementary school libraries with adequate shelving and the proper type of furniture.

Make alterations to provide adequate office and health facilities in buildings where these are lacking.

Remodel space as it is available, in secondary schools, for proper guidance facilities.

Provide for departmentalized Art in elementary schools with proper furniture, storage facilities and sinks.

Additional Physical Education equipment to meet the needs of current emphasis on physical fitness will be provided.

Replacement and supplementing old worn-out musical instruments, record players and other items to meet the needs of the music program.

Remodel or, if necessary, build small additions to provide adequate acoustically-treated practice rooms for music education in secondary schools.

Availability of more and various visual aids projectors. Some National Defense Education Act money will be available.

Installation of Language and Reading Laboratories in all secondary schools as teachers are trained in their use. National Defense Education Act money would share half the cost of the Language Laboratories,

Furnish each school with additional television sets so that there will be one set for each 250 pupils.

Furnish each school with one additional AM-FM radio receiver for educational broadcasts.

Considerable progress was made during 1963 and 1964 on this program. All schools received some items of new equipment. Several of the secondary schools were equipped with new laboratory facilities and shops.

In order to provide the best type of equipment where needed most, much time is consumed in making surveys of needs and writing specifications. Some of this equipment we have never before purchased. This requires checking courses of studies, conferences with supervisors, principals and teachers in order to determine the exact items most suitable.

### C. Modernization with Federal Matching Funds

To date Federal matching funds have been allocated to improving facilities and equipment in the fields of Vocational Horticulture, Data Processing and Business Education.

Our share of the matching funds to be contributed for this work amounts to $367,505.00.

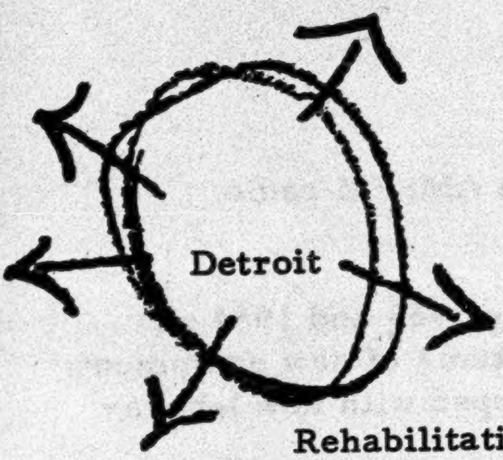
### D. Building Improvements

This is a program which has been going on for about thirty years. This program takes care of such things as the budget permits, to install many needed additional items as chalkboards, mounting boards, map rails, electrical outlets, improved lighting, room darkening facilities, sinks, wash bowls, office alterations, educational room alterations, floor covering, acoustical treatment, and other miscellaneous educational improvements. Maintenance is not part of this program. Last year $200,000 was expended in this area.

-*-*-*- -*-*-*- -*-*-*-

"One question, however, assumes greater importance than any other: Does the building effectively implement the educational program?"

--John Lyon Reid, F.A.I.A.
Partner, Reid, Rockwell, Banwell & Tarics



By Alvin G. Skelly
Director, School Housing Division

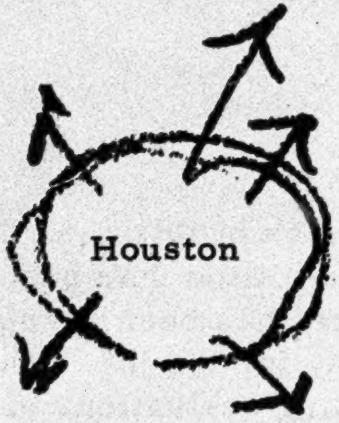
Rehabilitation work as a systematic program in Detroit has been directed at those schools constructed before 1912 which were not to be replaced, but which needed both health, safety and educational upgrading to be retained in service.

The 1912 date is significant as the date when fire resistant construction became required by city code. Virtually all of Detroit school buildings constructed before that date were constructed with masonry bearing walls, wooden beams, and non-fire resistant stairwells and corridors. Detroit in 1959 had approximately seventy structures of this character. After a careful survey of these structures it was determined that approximately twenty-two could be made fire safe and otherwise upgraded at reasonable cost, but that the others should be scheduled for replacement.

These programs of rehabilitation have been carried out at costs ranging from $100,000 to $250,000 per building and per pupil costs ranging from $150 per pupil to $375 per pupil. Since highest priority in this program was given to safety and health measures, these features have been most consistently carried out in the rehabilitation projects. Because of the pattern of budgeting, there was varied attention given to educational upgrading within instructional spaces. Most of these schools have been relighted prior to or as part of this program. Many have had acoustical treatment. Some have new classroom furniture, but there is not a consistent pattern of upgrading of the educational equipment.

School buildings constructed prior to 1919 were, almost uniformly, buildings two stories in height with a full basement. These basement areas usually house such facilities as gang toilet rooms, some classrooms, play areas and mechanical equipment rooms, such as fan rooms and boiler rooms.

School buildings constructed since 1912 are practically all fire resistive structures.



By Glenn Fletcher
Deputy Superintendent

The patrons of the Houston Independent School District want safe, efficient and modern school buildings. This is evidenced by the fact that they have approved, since World War II, eight consecutive bond issues in the aggregate amount of a quarter of a billion dollars to finance new and improved school facilities. The last of these bond issues was approved on May 19, 1965, in the amount of $59,800,000. Approximately 20% of this amount was earmarked for modernization of existing schools. However, the practice of modernizing older schools is not new in the district. Fortunately for the people of Houston, more than 75% of the existing public school facilities are post-World War II buildings and, consequently, requirements for up-dating these facilities are not as great as is the case in many of the larger school systems over the country which have larger percentages of much older buildings.

A special research committee composed of four top level school administrators has recently been appointed by the Board of Education to make a long range study for the purpose of doing basic research and making a projected study of fiscal needs and related problems of the Houston Independent School District for five, ten, fifteen, and even twenty years ahead. This committee has been organized and working for some sixty days under the direction of a consultant on public school fiscal matters from The University of Texas. It is anticipated that it will make its final report to the Board of Education in June of 1966. Included with three other categories of this study will be that having to do with the provision of school building facilities for the period of the projected study. The school district has on hand a sizable balance from a large bond issue voted in 1962, combined with the $59,800,000 voted May 19, 1965, with which to provide for these facility needs for the next five years. There will be close coordination in planning not only for new facilities, but planning with great emphasis upon modernizing of existing facilities and replacement of some of those buildings which do not hold promise of practical use for many years ahead.

The Board of Education and the administration of this school district are more "modernization-minded" at this time than has been the case in previous years. First, the need has been recognized and, second, the money is available to pay for the job. The machinery for handling the procedures for making evaluations of existing schools is now in the formative stages and, by midsummer of 1965, the staff, with the help of architects and engineers and members of the Long Range Study Committee, will be well underway in implementing this program.

Here are some of the types of projects which we have either in progress or completed within the last few years, with emphasis upon making existing buildings more adaptable to the needs of current school programs::

## A. SECONDARY

1. In 1962 we completed new science additions (all air conditioned) at twelve junior high schools to make it possible for live science laboratory experiments to be done at this level. At four other junior high schools, science laboratory facilities were provided in major rehabilitation programs.

2. In 1963, sizable vocational education shops were built at six senior high schools. These included auto mechanics, metal trades, cosmetology, welding, photography, printing and vocational agriculture shops, etc.

3. Since 1960, all senior high schools in the system have been provided with air conditioned language laboratories (18).

4. In 1961, we built a science laboratory addition, along with sixteen additional classrooms at Pershing Junior High School. In the laboratory portion of this building, we provided a temperature-controlled mall which served the dual purpose of carrying the flow of student traffic and as a botanical garden situation with a clear view into the science

laboratories, This has become one of the outstanding junior high school laboratory-science set-ups in this area.

5. In June 1960, there was provided at one of our senior high schools (San Jacinto) a pair of laboratory and shop buildings (two-story), portions of which were air conditioned for the purpose of providing an unusually attractive comprehensive high school. This school carries the emphasis usually placed upon academic achievement with the typical practical arts programs ordinarily offered in our high schools, but it has, in addition, corresponding emphasis upon vocational programs. It has become a city-wide, four-year high school, since the broad range of vocational courses cannot be offered in the other seventeen senior high schools in the district. This school also serves as the center for day and evening programs in all areas of academic high school work and, in addition, is the center for the adult vocational courses that are offered at times other than during the regular day school hours.

## B. ELEMENTARY

1. Seven elementary schools in the Houston district have undergone full modernization treatment in the past few years. Typical of these is Douglass Elementary School, which was built in 1927 with a capacity of approximately 500 children. Offices were small, cafeteria and kitchen were inadequate, central facilities and storage were practically obsolete. In a recent modernization program at this school, the inadequate cafeteria was converted into a central administrative unit including principal's office, library, counseling rooms, storage rooms and two special education rooms, all air conditioned. An adequate cafetorium has been provided to comfortably accommodate some 500 children for assembly. Team teaching rooms, twelve additional classrooms, teachers' lounges, adequate restrooms, hard surfaced play areas, modern kindergarten and primary rooms were also provided. So, with the original seventeen classrooms brightened up and the new facility in operation, old Douglass

School has become one of the bright spots of the district.

2. The original Langston Elementary School was erected in 1918 with a capacity of approximately 385 students. Even though the building was in fair condition, it was practically impossible to make major internal changes because of loadbearing walls, high ceilings, large and awkwardly arranged corridors, inadequate restrooms, etc. The site was inadequate, but the enrollment was about 1,000 students. The modernization program at this school provided sixteen new additional classrooms (including two team teaching rooms), adequate restrooms, and a central unit including a principal's office, clinic, library, storage rooms, conference rooms, etc. Also, an adequate cafetorium and kitchen has been provided. Because of limited site, the classroom addition of this new structure was built on piers ten feet above grade level. Within the near future, this open space underneath the classroom addition will be closed-in for twelve additional classrooms at less than one-half the cost of regular new additions. This is a relatively simple matter and is economical to handle. When these rooms are provided, the old structure can be removed from the site, making possible greater use of the available space, inasmuch as the original building was built in the "middle" of the site.

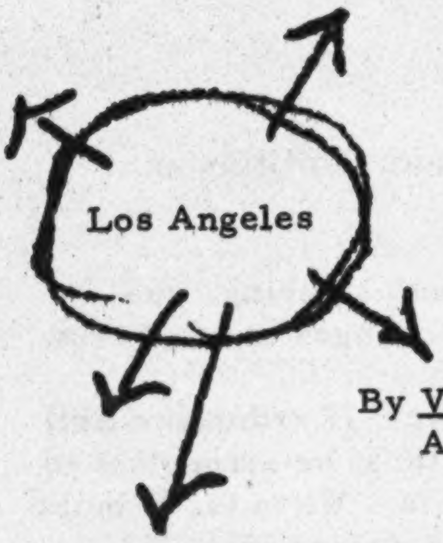
These two kinds of approaches to modernization and to replacement of buildings are typical of the program that is underway among our older and less adequate schools in the Houston Independent School District.

Note: There have been provided in existing schools in excess of 160 classroom (additions) and other instructional facility additions in the Houston Independent School District during the past twenty years.

-*-*-*- -*-*-*- -*-*-*-

"I hope we don't forget landscaping. A tree makes a wonderful difference."

--Board member at the Great Cities Spring Conference, New York City, May 1, 1965



By Virgil Volla
Associate Superintendent

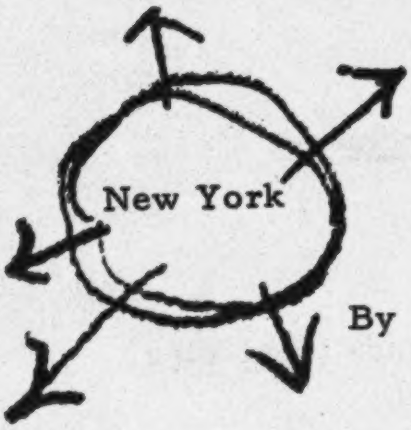
Since World War II, Los Angeles Unified School District has maintained a definite program of modernization for the older school buildings. In the elementary and secondary schools items of modernization are as follows:

| Per cent of Total Schools Completed | | Item |
|---|---|---|
| Sec. | Elem. | Classroom Modernization Includes |
| 79 | 82 | Improved lighting |
| 79 | 82 | Acoustical treatment |
| 87 | 75 | Room darkening venetian blinds (replacing roller shades) |
| - | 72 | Installation of sinks |
| 98 | 98 | Installation of electrical clocks |
| 90 | 85 | Installation of electrical convenience outlets |
| - | 20 | Removal of cloakrooms and installation of modular cabinets |
| 85 | 50 | Provide a projection screen for each classroom |
| - | 50 | Provide kiln room in each elementary school |
| | | General School Modernization Includes: |
| 90 | 38 | Provide public address system to all classrooms |
| 100 | 88 | Provide library in each school |
| 85 | 63 | Provide fire sprinklers in all multi-story buildings |
| | | Continuous Programs as Required: |
| | | Enlarge and improve health, counseling, and administrative facilities (as required by increased enrollment). |

Improve teachers' workroom facilities as required.

Improve industrial arts, homemaking, and science facilities to meet changes in emphasis.

In the State of California, the "Field Act" (Earthquake Act) requires that buildings built prior to 1933 must be strengthened or replaced to meet structural requirements. When these buildings are rehabilitated the above improvements are included. The present program involves 104 buildings.



By Salvatore J. Sciano
Acting Director
Bureau of Modernization

The New York City School Plant comprises a total of approximately 838 buildings actively in use as of February 1965, some of which date back as far as 1870.

In January 1960, it was decided to start a large scale modernization program, the purpose of which was to provide a complete electrical modernization; to improve existing sanitary conditions, to update toilet and kitchen facilities, and to update and improve the educational facilities.

Generally, it was decided that the modernization program would be applied to approximately 250 buildings erected during the period between 1920 and 1938, as well as to a few sound structures erected between 1910 and 1920. Buildings erected prior to 1900 would not be included because, generally, they are not fireproof and, furthermore, are scheduled for demolition and replacement in the long range building program. Buildings erected after 1938 were felt generally to be sufficiently up-to-date so as not to require modernization at this time. As of this writing, approximately 200 projects have been started. Some of these projects have already been completed, while others are now in the construction or planning stages.

The "Program of Requirements" for a modernization project is prepared in two steps:

The Division of School Planning and Research prepares a program indicating the required changes and improvements in educational facilities for a particular school. The Bureau of Maintenance of the Office of School Buildings then prepares a program of required physical improvements (including a complete electrical modernization) as determined by field surveys made by engineers of its staff, plus a cost estimate for the entire project (including the educational changes).

After the Program of Requirements and Estimate are prepared, the Board engages a consulting engineering firm to prepare complete construction drawings and specifications. The fee paid for design services is based on the New York City standard fee curve for new building design, adjusted upward to provide for necessary additional on-site survey, verification of existing conditions and other contingencies which make "modernization" design more time-consuming than new building design. It was decided to hire consulting engineers rather than use Board of Education personnel, because of the enormity of the program and the fact that our staff is otherwise occupied. The construction of these projects is presently supervised by Board of Education field personnel, though the possibility of having the consultants do this aspect of the work too, is being studied. The consulting engineers are usually given a "package" of three jobs to modernize with an estimated total construction cost in the neighborhood of $1,000,000. This is done to make the fee attractive even to the larger consulting firms.

State law requires that projects of this type and magnitude be bid on the basis of four prime contracts (i. e. general construction, heating and ventilating, plumbing and drainage, and electrical). The electrical contractor is made responsible for the coordination of all contractors, since his portion of the job usually comprises in excess of 50% of the total cost. On the average, a public school modernization costs approximately $250,000 to $350,000, while high school modernizations range from $700,000 to more than $1,000,000.

To coordinate and expedite the modernization program, the Superintendent of Schools on February 9, 1965 established a Bureau of Modernization in the Office of School Buildings.

Philadelphia

By Harry B. Saunders
School Facilities Consultant

In September 1964, the Philadelphia Board of Public Education entered into a contract with this writer as Consultant for a School Facilities Survey. This was performed through a system of visitations to the schools with principals, district superintendents and district engineers. Evaluation of the need was developed by discussion with individual school custodians, teachers, department heads, principals and directors of various departments of instruction.

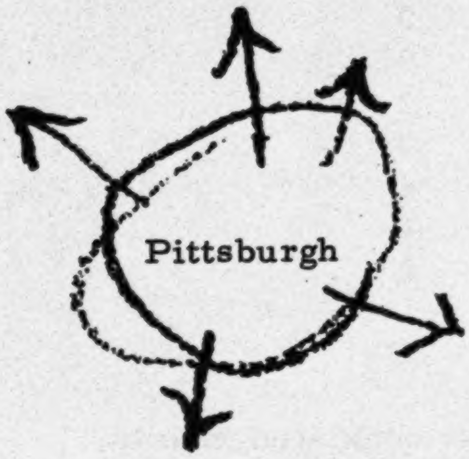
As a result of this survey, a long range ten-year capital program was developed, and the first year of this program was submitted to the Board of Public Education for adoption as the School District's current year capital budget and program. The proposed ten-year capital program is intended to serve as a guide for the projects and financial budget schedule development each year. Each succeeding year's capital budget will be developed on the basis of this program, making allowance for changes in priority, problems of site purchase, and construction cost index changes which may affect estimated costs. Each year's needs are based upon the successful completion of the previous year's projects.

The ten-year program involves an expenditure of $389 million and includes the following: twenty-three new secondary schools, eleven new elementary schools, and one new special school. It also involves the replacement of two secondary schools, the replacement of forty elementary schools and the replacement of one special school. It will involve making additions to fourteen secondary schools and forty-one elementary schools.

Specifically for the current year a budget of $46,500,000 is presently before the Board of Public Education for adoption. This involves the following: six new secondary schools, eight new elementary schools, replacement of two secondary schools, replacement of twenty-three elementary schools and replacement of one special school. It also involves additions to ten existing secondary and to eighteen elementary schools.

These projects are being initiated in 1965 either by site acquisition, contract award, or actual construction.

For the implementation of this program, the electorate at the recent primary election passed a resolution increasing the debt limit of the school district from three per cent to five per cent.



By J. H. Thompson
Director, Division of Plant
Operation and Maintenance

The Pittsburgh Board of Public Education is currently concerned with expanding school facilities in certain areas of the city to accommodate increased enrollment. Since the bulk of all building funds are being used for this purpose, our plans for the renovating of some of the older buildings must be temporarily bypassed. Under construction are a large high school addition, the first in a number of years, and good-sized additions at two elementary schools, as well as several demountable-type classroom buildings. New facilities on the drawing boards and those contemplated in the near future are all directed to the relieving of overcrowding or the accommodation of a change in program. Our next building to be bid is the Columbus

Elementary School, the original of which burned ten years ago. Since then the pupils have been "temporarily" housed in an available wing of a nearby high school.

Pittsburgh has eliminated thirty-four obsolete and combustible school buildings since 1950 and to complete this program, has six combustible and three partly combustible structures to go. Because of the nature of the construction of these buildings, they will not be considered for renovation. However, there are a number of aged, fire-resistant schools with considerable dignity and architectural character that could be salvaged from their educationally obsolete status by a substantial modernization or renovation. Our modernization program was moving along comparatively well until 1962, when all available capital money was diverted into new construction. Our record since 1954 is as follows:

| | Extensively Remodeled | New Addition With Some Renovation Work |
|---|---|---|
| 1954 | 2 | 0 |
| 1955 | 2 | 0 |
| 1956 | 0 | 2 |
| 1957 | 0 | 0 |
| 1958 | 3 | 4 |
| 1959 | 3 | 1 |
| 1960 | 1 | 2 |
| 1961 | 1 | 1 |
| 1962 | 2 | 1 |

These renovations or remodeling projects consisted mainly, though in many cases not all, of the following items:

Rewiring and relighting building
Updating of heating and/or ventilating system
Repiping of plumbing systen
Construction of fire towers
Installing new acoustical ceilings
Installing new floor covering
Providing additional storage space
Updating administrative suites
Pointing and waterproofing
Replastering and painting

Along with this, of course, was the shifting of facilities within the building to provide more classroom space, better circulation within the building and adapting existing space to the new educational programs. However, two items, the replacement of roofs and the installation of new windows, have seldom been included in our modernization program because of the cost factor. Yet we recognize these components as a necessary part of a complete renovation and even though delayed from having been included, they necessarily must be picked up at a future time as individual projects.

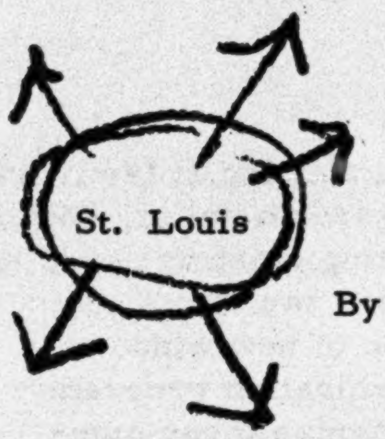
Our last two large renovation projects done in the 1961-62 period were the McNaugher School (thirty teaching rooms) done at a cost of $226,417, and the Woolslair School (twenty-one teaching rooms) done at a cost of $284,394. Since the completion of this work, modernization has been limited to jobs of one or two individual classrooms where improved lighting, floors, ceilings and chalkboard are installed to update and adapt the area to fit a particular program.

The staff of the Division of Plant Operation and Maintenance is anticipating that in the not too distant future we will have the opportunity to return to our interrupted schedule of building modernization and renovation. We feel, as many others also do, that an older school building that is aesthetically pleasing and educationally functional should be preserved to maintain the character and integrity of the large city as part of its necessary link to the past.

-*-*-*-　　-*-*-*　　-*-*-*-

"There are many solutions to the problems of the old school... Each problem requires individual study and understanding if it is to be satisfactorily solved. Of one thing we are sure -- if we content ourselves with half-hearted solutions we stand to damage the great tradition of this country's public schooling. Creative leadership is required and bold decisions have to be made."

--F. Philip Brotherton
Partner, The Perkins & Will
Partnership



By J. Ernest Kuehner
Assistant to the Superintendent

How does one define modernization? Perhaps what St. Louis has done under this terminology may be something else in another system - nevertheless, St. Louis attempted to "upgrade" each school by doing the following, which was charged to a "modernization program."

## 1955 Bond Issue Program -
Elementary and Secondary Modernization - $2,250,000

### Elementary Schools

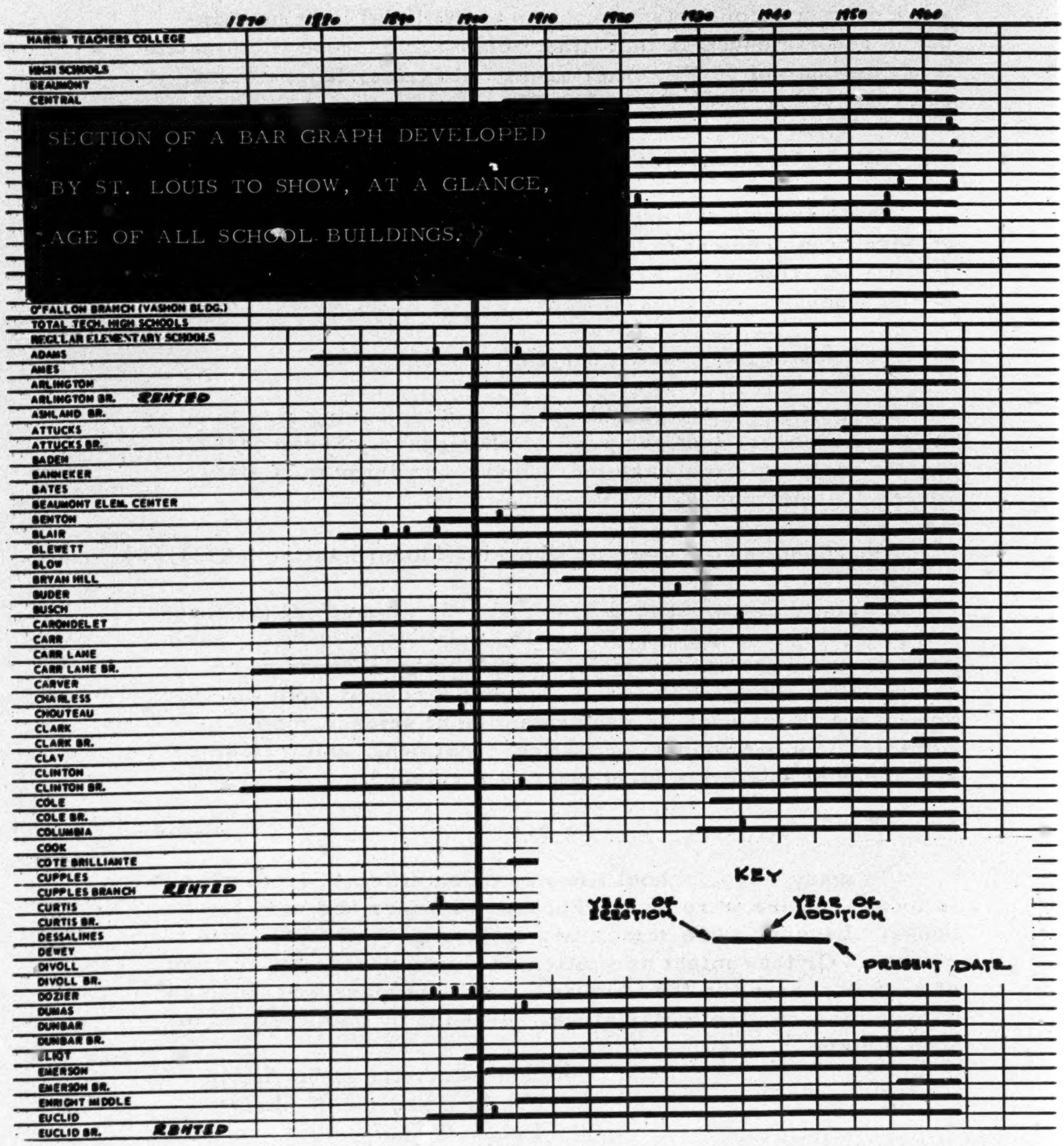
Patrons in school districts frequently view a bond issue program in the light of "what is going to be spent to improve our school." It was decided that approximately $20,000 would be spent in each of the selected one hundred elementary schools. Items could include: removing a partition between two classrooms, erection of a stage, and front curtain to provide a small assembly room; installation of new chalk and tack board; provide additional outdoor drinking fountains; provide two eight-foot sections of under-window shelving; provide additional or new storage rooms; install science table in one or two upper grade rooms; remodel specific administrative and hygiene quarters, etc.

### Secondary Schools

Items in this category included modernization of Home Economics and science laboratories, hygiene office, administrative offices, counselors' offices, acoustic treatment of lunchrooms and auditoriums, and shower rooms. Also included was the provision of science tables, chalkboard (replacement), tackboard, and some shop equipment, etc.

### Lighting of Classrooms - $1,895,994

Each of the 3300 classrooms in both elementary and



SECTION OF A BAR GRAPH DEVELOPED BY ST. LOUIS TO SHOW, AT A GLANCE, AGE OF ALL SCHOOL BUILDINGS.

secondary divisions was brought up to artificial lighting standards recommended at that time - classrooms were illuminated to a minimum of 50 FC; other areas, libraries, laboratories, etc., ranged from 60 FC to 100 FC.

Non-Instructional Modernization - $2,079,600

These funds were expended for modernization of electric service, replacement of heating units - or their repair - in designated schools, and replacement of fixtures and service to and from fixtures in lavatories in some of the older schools.

Addition to Inadequate School Sites - $655,700

Some of our older schools were on sites having less than thirty-five square feet per pupil of play-space. Seven of the most inadequate sites were increased to a minimum of sixty square feet per pupil.

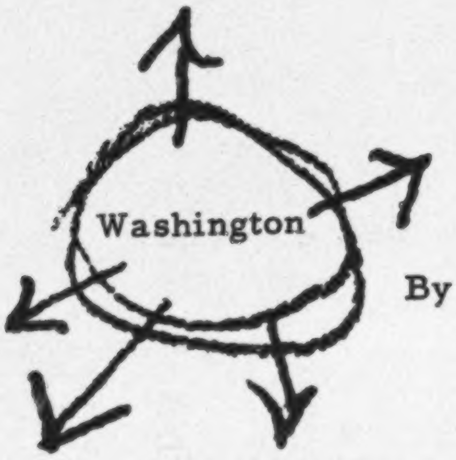
1962 Bond Issue - Secondary School Modernization - $721,580

A survey taken between 1955 and 1961 of physical facilities in some instructional areas revealed many deficiencies. Each secondary school was carefully studied and priorities were established. In addition to the amounts expended from the 1955 bond issue items such as modernization of science rooms, libraries, locker rooms, acoustical treatment, cafeterias, and business education furniture were included.

-*-*-*- -*-*-*- -*-*-*-

"In many ways, school life was much different from what it is today. There were no blackboards or paper and very few books. Lessons were sometimes written in sand tables with a pointer. Or they might be written on a long board with the end of a stick charred in the fireplace; when the class was finished with the lesson, the material was 'erased' by being shaved off with a plane."

--from Heritage of St. Louis
published by the St. Louis
Public Schools, 1964, in
conjunction with the St. Louis
Bicentennial, 1964-1966



By Carl F. Hansen
Superintendent

In Washington, D. C. up to this time, modernization has been limited to those buildings which have been or are being added to. In these cases we have added every facility which would normally be built in a new structure. Further, we bring the electrical systems up to present code requirements and add to existing site if needed. Certain old eight-room schools built prior to 1910 are programmed for replacement.

We are considering the addition of special purpose rooms to those buildings up to forty years old which are still in good condition.

## AGE OF INSTRUCTIONAL ROOMS IN MEMBER CITIES

| | Built Before 1920 | | | | | Total Rooms | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Elem. | Elem.-Sec. | Sec. | Non-Graded | Total | Elem. | Elem.-Sec. | Sec. | Non-Graded |
| Baltimore | 1776 | 1352 | 50 | 374 | 0 | 5433 | 2989 | 382 | 2062 | 0 |
| Boston | 1537 | 905 | 238 | 366 | 28 | 3072 | 1467 | 434 | 1143 | 28 |
| Buffalo | 1160 | 801 | 0 | 359 | 0 | 3016 | 2277 | 0 | 713 | 26 |
| Chicago | 6007 | 4717 | 446 | 844 | 0 | 15183 | 10772 | 1150 | 2702 | 559 |
| Cleveland | 2396 | 1780 | 44 | 572 | 0 | 4851 | 3027 | 90 | 1668 | 66 |
| Detroit | 2651 | 1544 | 367 | 740 | 0 | 7880 | 4024 | 1744 | 2112 | 0 |
| Houston | 577 | 422 | 27 | 128 | 0 | 5566 | 3160 | 76 | 2330 | 0 |
| Los Angeles | 419 | 259 | 0 | 160 | 0 | 14470 | 7421 | 0 | 6461 | 588 |
| Milwaukee | 1342 | 1031 | 0 | 311 | 0 | 3730 | 2296 | 0 | 1317 | 117 |
| New York | 10700 | 7416 | 494 | 2721 | 69 | 36288 | 20765 | 1363 | 14091 | 69 |
| Philadelphia | 2609 | 1927 | 182 | 500 | 0 | 8743 | 4828 | 903 | 3012 | 0 |
| Pittsburgh | 1002 | 644 | 49 | 309 | 0 | 4470 | 1242 | 374 | 854 | 0 |
| St. Louis | 1850 | 1501 | 0 | 349 | 0 | 3206 | 2402 | 0 | 804 | 0 |
| San Francisco | | NOT AVAILABLE | | | | | | | | |
| Washington, D. C. | 967 | 695 | 0 | 272 | 0 | 4471 | 2623 | 20 | 1828 | 0 |

Selected Statistics from USOE Building Survey, Spring 1962 (Table 19)

## AGE OF BUILDINGS - FIFTY LARGEST CITIES

### Number and Per Cent of Permanent Buildings

| | Built Before 1920 | | | | | Total Buildings & Additions | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Elem. | Elem. -Sec. | Sec. | Non-Graded | Total | Elem. | Elem. -Sec. | Sec. | Non-Graded |
| National | 3882 | 3208 | 185 | 482 | 7 | 21468 | 14528 | 1182 | 5504 | 254 |
| Per Cent | 18.1 | 14.9 | .9 | 2.2 | .1 | 100.0 | 67.7 | 5.5 | 25.6 | 1.2 |

Selected Statistics from USOE Building Survey, Spring 1962 (Table 01) in the 50 largest cities in U. S.

## A SCHOOL MODERNIZATION BIBLIOGRAPHY

This bibliography is not exhaustive, but it is hoped it will provide a guide for additional information on the subject.

Sessions, E. B., "Rehabilitation of Existing School Buildings or Construction of New Buildings," Research Bulletin No. 2, Research Corporation of the Association of School Business Officials, 1964.

Handler, Benjamin, "Economic Planning for Better Schools," Ann Arbor: Publication Distribution Service, University of Michigan.

Leggett, Stanton, "Upgrading Existing School Facilities," (Scarsdale, N. Y. High School), Architectural Record, February, 1963.

American School & University Magazine, Physical Plant Section, pp. 23-29, Volume 36, June, 1964.

Architectural Beacon, Vol. 4, No. 1, May-June 1964, and Vol. 4, No. 2, July-August 1964. (Earl Price, editor, P. O. Box 1940, New Haven, Connecticut)

Architectural Forum, "A High School Rehabilitated, "(Evergreen Park, Illinois), pp. 128-129, November 1963.

American School Board Journal, "The Many Lives of Evanston Township High School," pp. 24-28, September, 1960.

School Management, "How to Reclaim Waste Space," (Evanston, Illinois, Township High School), April, 1962.

The Nation's Schools, "Planning Schools for Good Hearing," Administrative Study No. 9, Vol. 67, No. 5, May, 1961, pp. 95-126.

Planning America's School Buildings, AASA School Building Commission, 1960; 229 pages (021-00372).

National Inventory of School Facilities and Personnel, U. S. Department of Health, Education and Welfare, Office of Education, Washington, D. C., Spring, 1962.

Room 103, Deployable Space, Guide for Classroom Modernization, a report from the Detroit Public Schools and Michigan State University, supported by a grant from the Educational Facilities Laboratories, Inc., Bureau of Research and Publications, College of Education, Michigan State University, East Lansing, Michigan, $2.50.

Fifteen Fine Years -- School Construction Progress, 1950-1965, Milwaukee Public Schools, Milwaukee, Wisconsin.

Progress Report of Programs for Modernization of Older School Buildings, 1957, 1963, Milwaukee Public Schools, Milwaukee, Wisconsin.

Hartman, Theodore W., "The 1965 Building Program and Other School Housing Needs to 1965," Cleveland Board of Education, Cleveland, Ohio, January, 1965.

Kliegman, Robert (S. U. A., Incorporated), "Report to the Board of Education, Los Angeles Unified School District," December 17, 1962.

School Plant Directory, Volume I and Volume 2, Bureau of Research, Baltimore City Public Schools, Baltimore, Maryland.

One Hundred Tenth Annual Report, Board of Education of the City of St. Louis, for the year ending June 30, 1964.

Traver, E. A., "When Does It Pay to Remodel?" (Report of Union School District No. 1, Lake Geneva, Wisconsin), The American School Board Journal, Vol. 140, No. 2, February 1960, pp. 41, 44-45, 80.

"Proposed 1964-1965 School Building Programs Prepared for Public Hearing," School Planning and Research Division, Board of Education, City of New York, June, 1963.

"Building Construction Flow Charts," prepared by Dr. Richard P. Foote, School Construction Expediter, Board of Education of the City of New York, 1963.

Western Architect and Engineer, "Transformation of a Landmark" (Sentinel Building, San Francisco), December 1959, File No. Fl. 1, pp. 12-13.

Progressive Architecture, "Flatiron Renovation in San Francisco," News Report, February 1960, p. 54.

Architectural Forum, "The New Columbus Tower" (San Francisco), January 1960, p. 125.

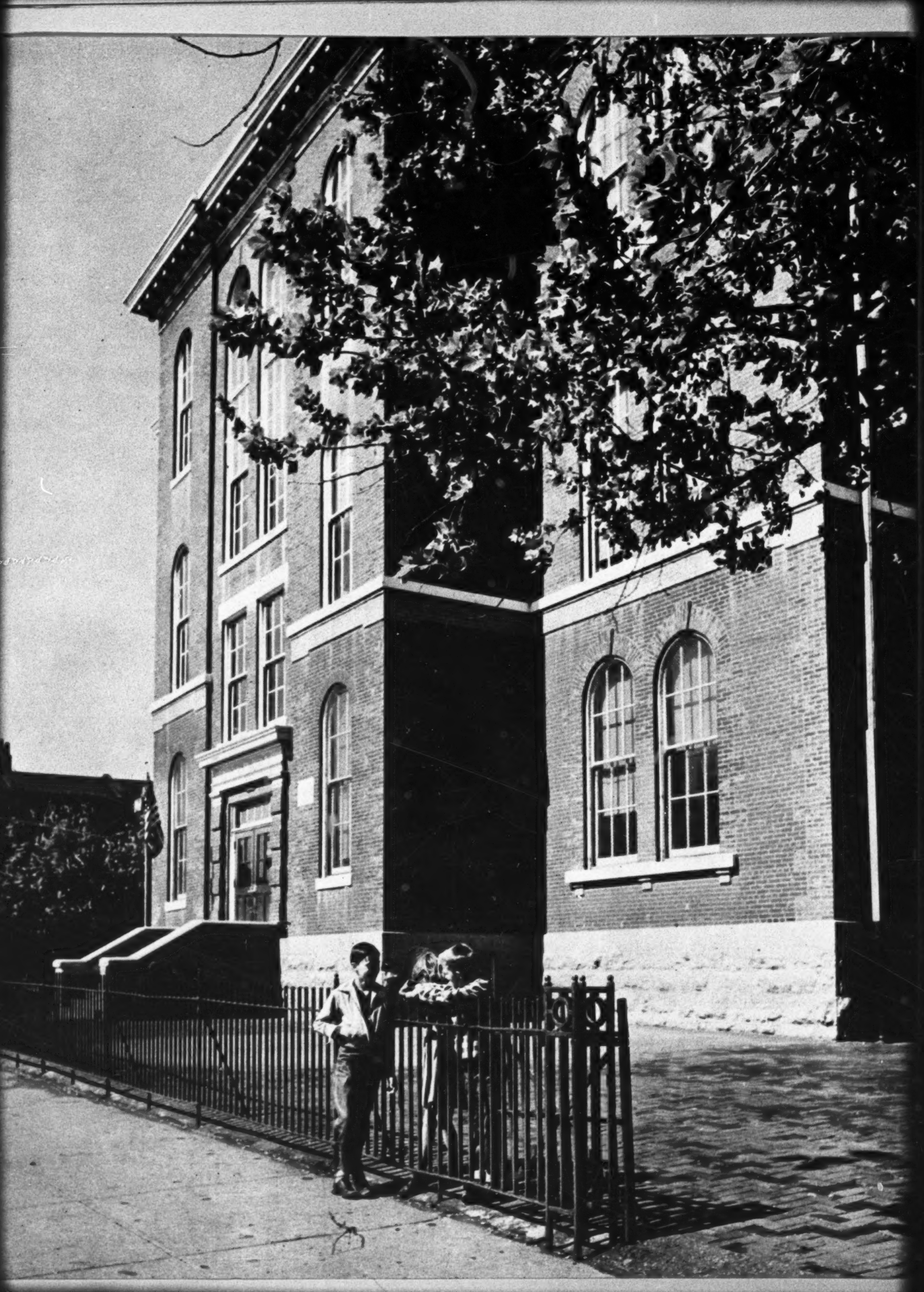
School Facilities Survey, A report presented to Superintendent of Schools and the Board of Public Education of the City of Philadelphia, Pennsylvania, by Harry B. Saunders, School Facilities Consultant, March 31, 1965.

Boston Schools - 1962, a study under a contract between the Boston Redevelopment Authority and Harvard University, May 1962.

Five Years of Progress, 1954-1959, published by Bureau of Educational Research, College of Education, Michigan State University, in cooperation with the Chicago Public Schools and the Educational Facilities Laboratories, Inc., August 1960.

We Build 1953-1963, Ten Years of Growth, Annual report of the General Superintendent of Schools, Chicago, Dr. Benjamin C. Willis, 1964.

School Facilities Obsolescence Survey, developed by Donald Leu and Floyd Parker, associate professors of education, Michigan State University, and Kenneth Glass, coordinator, Detroit Modernization Project; Copyright 1960 by the Board of Trustees of Michigan State University.



## NEW LIFE FOR OLD SCHOOLS

Project Director: Ben E. Graves

Cover Design: Paul Pinson

Editorial Assistant: Willie Sue Harris

Printer: Aagard, Chicago

## REGISTERED WORKSHOP PARTICIPANTS

**Baltimore**

Ambrose Chlada, Jr.
Edwin Stein
John J. Sweeney, Jr.

**Boston**

Anthony L. Galeota

**Chicago**

John R. Borling

**Cleveland**

George E. Theobold

**Detroit**

Alvin G. Skelly

**Houston**

George A. Knight
Bruce W. Wallace

**Milwaukee**

Howard M. Aker
Thomas A. Linton

**New York**

Richard T. Foote
Eugene E. Hult
Salvatore J. Sciano

**Philadelphia**

Walter E. Arrison
William B. Schoenleger

**Pittsburgh**

C. F. Mellinger
John H. Thompson

**St. Louis**

J. Ernest Kuehner

**San Francisco**

Adolfo de Urioste

## WORKSHOP RESOURCE PERSONS

Charles William Brubaker, The Perkins and Will Partnership,
Archiects, Chicago

Liam F. Dalton, Segner & Dalton, Mechanical-Electrical
Engineers, White Plains, New York

Harry W. Gillies, Castagna & Son, Contractors, Manhasset,
New York

Anthony F. Nassetta, Weiskopf & Pickworth, Structural
Engineers, New York City

Robert L. Rannow, H. Sand & Co., Inc., Heating and Ventilating
Engineers, New York City

Bernard Reissman, H. Sand & Co., Inc., Heating and Ventilating
Engineers, New York City

---

## WORKSHOP GUESTS

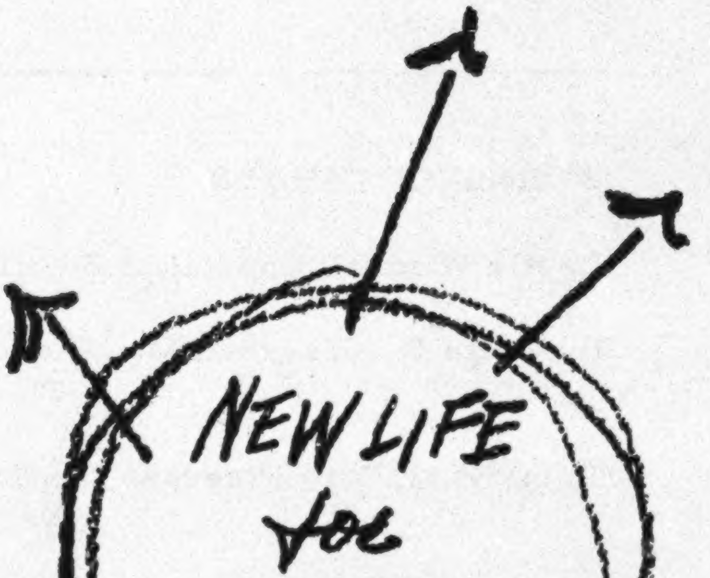
Austin Wilder, Council of Small Colleges, New York City

Burdette B. Gleason, Mt. Pleasant Central District No. 1,
Thornwood, New York

John Synal, Mt. Pleasant Central District No. 1, Thornwood,
New York

---

This study for The Research Council of the Great Cities Program for School Improvement is under a grant from the Educational Facilities Laboratories, Inc. of the Ford Foundation.


NEW LIFE
for
OLD
SCHOOLS

**Old school sketches:**
**Bernard J. Rooney,**
**Buffalo**

## THE RESEARCH COUNCIL OF THE GREAT CITIES PROGRAM FOR SCHOOL IMPROVEMENT

Dr. Benjamin C. Willis, President
Dr. Samuel M. Brownell, Vice President
Dr. Eileen C. Stack, Secretary-Treasurer
Dr. Frederick Bertolaet, Executive Secretary

BOARD OF DIRECTORS:

BALTIMORE, MARYLAND
Dr. Laurence G. Paquin, Superintendent of Schools
Mr. Eli Frank, Jr., President, Board of School Commissioners

BOSTON, MASSACHUSETTS
Dr. William H. Ohrenberger, Superintendent of Schools
Mr. William E. O'Connor, Member, School Committee

BUFFALO, NEW YORK
Dr. Joseph Manch, Superintendent of Schools
Mr. Anthony J. Nitkowski, President, Board of Education

CHICAGO, ILLINOIS
Dr. Benjamin C. Willis, General Superintendent of Schools
Mr. Frank M. Whiston, President, Board of Education

CLEVELAND, OHIO
Dr. Paul W. Briggs, Superintendent of Schools
Mr. John J. Gallagher, President, Board of Education

DETROIT, MICHIGAN
Dr. Samuel M. Brownell, Superintendent of Schools
Miss Louise Grace, Member, Board of Education

HOUSTON, TEXAS
Dr. John W. McFarland, Superintendent of Schools
Mr. R. Y. Eckels, President, Board of School Trustees

LOS ANGELES, CALIFORNIA
Dr. Jack P. Crowther, Superintendent of Schools
Mrs. Georgiana Hardy, Member, Board of Education

MILWAUKEE, WISCONSIN
Dr. Harold S. Vincent, Superintendent of Schools
Mrs. Elisabeth Holmes, Member, Board of Education

NEW YORK, NEW YORK
Dr. Bernard E. Donovan, Superintendent of Schools
Mr. Lloyd K. Garrison, President, Board of Education

PHILADELPHIA, PENNSYLVANIA
Dr. C. Taylor Whittier, Superintendent of Schools
Mrs. Albert M. Greenfield, Member, Board of Education

PITTSBURGH, PENNSYLVANIA
Dr. S. P. Marland, Jr., Superintendent of Schools
Mr. William H. Rea, President, Board of Education

ST. LOUIS, MISSOURI
Dr. William Kottmeyer, Superintendent of Instruction
Mrs. Gilbert Harris, President, Board of Education

SAN FRANCISCO, CALIFORNIA
Dr. Harold Spears, Superintendent of Schools
Mr. James E. Stratten, Member, Board of Education

WASHINGTON, D. C.
Dr. Carl F. Hansen, Superintendent of Schools
Mr. Wesley S. Williams, President, Board of Education